



# Sikorsky Archives News

January 2015

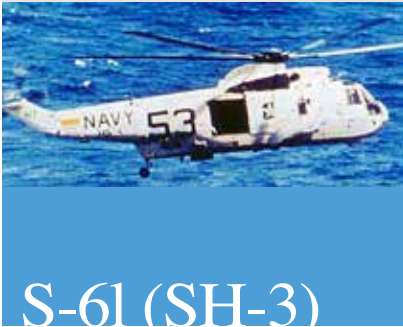
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The Decade of the 1960s  
Gave Birth to the Era of

## Sikorsky Turboshaft Engine Powered Helicopters



S-59 (YH-39)



S-61 (SH-3)

By the mid 1950s, engine manufacturers were developing light weight turboshaft engines that would increase the helicopter's overall performance and productivity required for the anticipated vertical lift missions. The Sikorsky S-59 (YH-39) was the first Sikorsky turboshaft

engine powered helicopter. It utilized a Turbomeca Artouste 425 shp engine. On August 26, 1954 it achieved a world speed record of 156 mph, and a world altitude record of 24,521 feet. Newer versions of turboshaft engine powered helicopters rapidly followed. ☺



S-62



S-64 (CH-54)



S-65 (CH-53)

Data for this issue of the newsletter was extracted from Dr. Kenneth M. Rosen's AHS Nikolsky lecture and subsequent AHS Journal paper titled, "The Importance of Propulsion Technology to the Development of Helicopter Systems with a Vision for the Future".

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... our organization has grown steadily, becoming a world source for historical Sikorsky information to support a myriad of requests such as book projects, model building, academic research and movies.

Dear Members,

It is a great pleasure for me to have the opportunity to wish all our members and volunteers a Very Happy and Healthy 2015! Over the years, our organization has grown steadily, becoming a world source for historical Sikorsky information to support a myriad of requests such as book projects, model building, academic research and movies.

November 2nd will mark the 20th anniversary of the incorporation of the Igor I. Sikorsky Historical Archives as a 501 (C) (3), not for profit organization. With the foresight of the first archives president, Harry Pember, and the strong support of the then president of Sikorsky Aircraft, Eugene Buckley, the foundation was started in 1995. Thanks to both of these individuals who recognized this "National Treasure" of Historical Information of the Life Achievements of Igor Sikorsky and the Company he created.

Last year marked the 125th Anniversary of Igor's birth and the 40th Anniversary of the first flight of the now famous Sikorsky BLACK HAWK helicopter. The celebrations of both events called upon the Archives to provide an extensive array of memorabilia to support the 125th celebration in the Moscow Polytechnic Museum and the production of a movie for the Smithsonian to be shown in 2015 featured the BLACK HAWK helicopter. Also, on October 11th, 2014, the Archives participated in another very successful Family Day 2014. Our display featured (see below) the 75th Anniversary, (September 14, 2014) commemoration the first lift off of the VS-300 and the humble beginning of the helicopter industry. The display featured the photos of every production Sikorsky model helicopter manufactured.

We see the year 2015 to be equally active as we continue preservation and dissemination of our valuable material. Our organization efforts are enabling significant productivity improvements in our ability to respond to requests. Likewise, our newly installed automated backup system is protecting us against potential disasters which could cause us to lose tens of thousands of man-hours invested in our categorization and digitization of precious assets. Thank you to the small group of dedicated volunteers who diligently give of their time pursuing these tasks and respond to many ongoing requests for information that comes to us every day from around the world. Again, let me express my sincere appreciation for your support through our membership program and to the volunteers that work to preserve this treasured material for the future. ☺

**Best wishes for a Happy New Year,**

Dan Liberto, President

Archive members in front of the archive display at the Sikorsky Family Day event from left to right are Jim Satterwhite, Lee Jacobson, Dan Liberto, Sergei and Elena Sikorsky, Paul Swanson, Allen Dobyns, Hank Chemelewski, Vinny Devine, Nikolai Sikorsky, Igor Sikorsky Jr, Joe Keogan, seated at table Ed Groves.





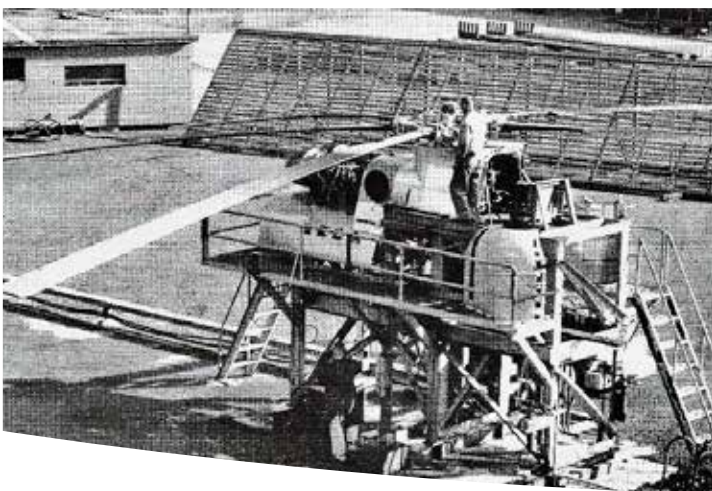
# The U.S. Navy T-58 Turbo Shaft Engine Development Program Awarded to General Electric in June 1953 was the spark that ignited the development of the Sikorsky Turboshaft Engine Powered Helicopters.

Although the Navy/GE contract was for an 800 shp engine, GE developed an X T-58-2 which produced 1024 shp. Sikorsky was awarded a development contract in 1956 to install two T-58-2 engines on the HSS-1 (S-58) aircraft. Two test aircraft were modified by replacing the R-1820 reciprocating engine and fan assembly with two T-58-2 engines in the nose compartment of each aircraft. Associated changes included the modification of support structure, clam shell nose doors, propulsion drive system, engine and fuel controls, and cockpit instrument displays.



S-58 (SH-34) with two GE T-58 engines

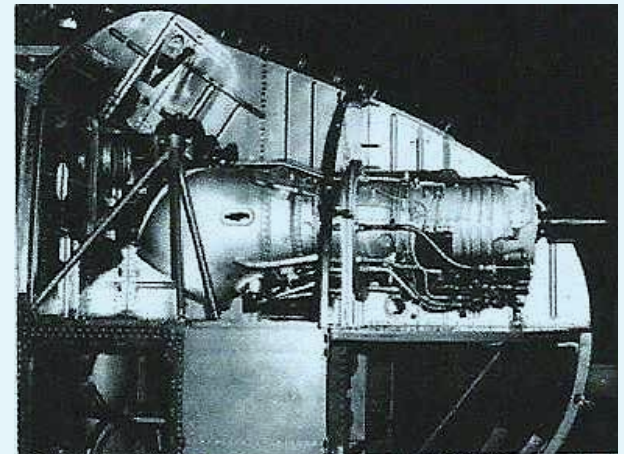
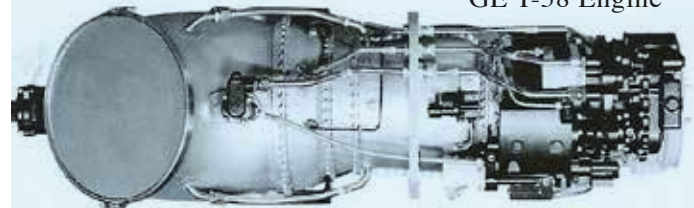
Engine Test Stand



S-58 Engine Compartment



GE T-58 Engine



GE T-58 engine Installation in S-58 Nose

General Electric built an engine test stand at their Schenectady, New York facility to evaluate the interaction between the helicopter main rotor dynamic systems and the turbine engine control response characteristics. This is the first known helicopter turbine engine test bed of its kind, and laid the ground work for future helicopter turbine drive test facilities. Sikorsky supplied the main gear box, main rotor and main rotor blade assemblies. ☺

## The S-62 was the first turbine powered helicopter to achieve FAA certification for commercial operations.



S-55 (UH-19)



S-62

The S-62 was a company funded program, and utilized many of the time proven dynamic components of the S-55. The main gearbox was modified to accept the high speed turbine engine, and provide the speed reduction required for the main rotor. Total engine power was limited due to the main transmission limitations. The single General Electric T-58 turbine engine S-62 was certified to carry pilot, copilot and eleven passengers. The S-62 was the first helicopter in the world with a flying boat hull certified for amphibious operation. Coupled with its sea level performance capabilities, the S-62 had exceptional high altitude capabilities delivering or picking up a one ton payload at 14,000 feet.

Los Angeles Airways, San Francisco/Oakland Airways and Petroleum Helicopters, Inc were the first commercial carriers to recognize the S-62 capabilities. The U. S. Coast Guard procured the HH-52 version of the aircraft in 1962.



S-62 (HH-52)

HH-52 Rescuing a flood survivor



S-62

	Total Aircraft Produced: 170	
	S-62	HH-52
Sikorsky Aircraft:	46	99
Foreign Licensee:	0	25





S-61L aircraft utilized fixed landing gear without sponsons with a longer cabin seating more passengers

SH-3s in flight alongside U.S. carrier



## The S-61 (SH-3) was the first twin turbine powered Sikorsky Helicopter

The SH-3 U.S. Navy version first flew in March 1959 and was developed under a U.S. Navy contract for anti submarine warfare. The rapid operational success of the initial models created worldwide opportunities for military, government, commercial, search and rescue rear loading CH-3C and HH-3F Coast Guard and VH-3 presidential configurations. After 51 years and 24 million flight hours on the total fleet of 794 aircraft comprised of various models, government surplus SH-3 aircraft have been overhauled and converted to the S-61T configuration for the U.S. Department of State Service.



VH-3 landing on White House lawn



CH-3 Jolly Green Giant



HH-3 Coast Guard Rescue



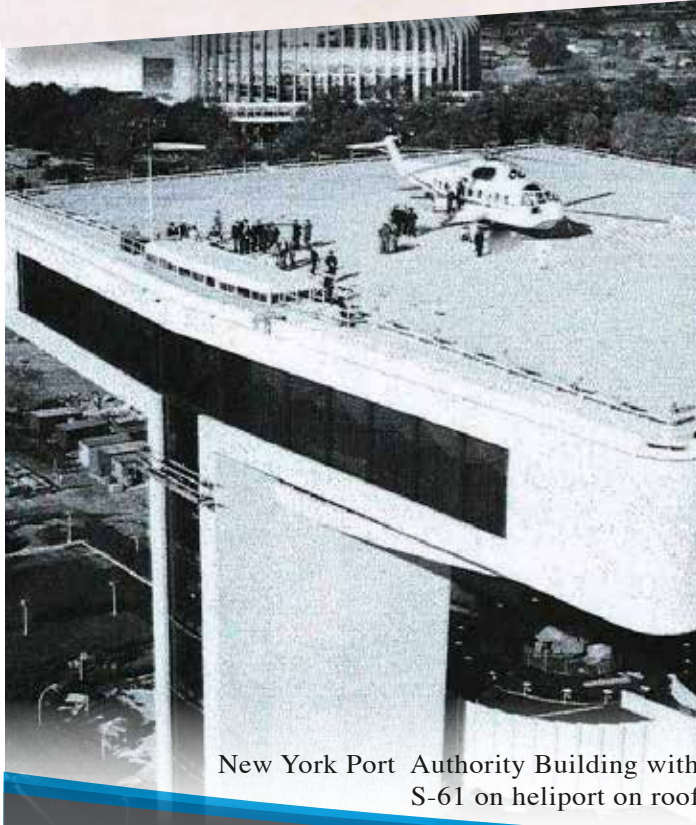
S-61T Department of State



On October 16, 1963, the S-61N officially became the primary passenger helicopter of the 1964-1965 New York World's Fair



S-61N flying near the Unisphere Globe at New York World's Fair 1964 -1965



New York Port Authority Building with S-61 on heliport on roof

The S-61N landed on the huge roof of the 120 foot tall Port Authority Heliport and Exhibit Building, which is the aerial gateway to the Fair. The steel and concrete building was the first tall structure in the world designed primarily as a heliport. The Port Authority building was distinguished by the "T" structure (for transportation) which extends the height and width of the enormous structure on each of its four sides. It occupied a site in the center of the Transportation Section.

The glass enclosed upper levels of the building contained an 1,100 seat dining area, a 400 seat cocktail lounge and two dance floors as large as the Grand Ballroom of the Waldorf-Astoria in Manhattan.

New York Airways operated the 25 passenger S-61 as a scheduled helicopter service linking the Fair with Manhattan, New York International, LaGuardia and Newark Airports as well as other points in the New York Port District. 🍷





S-65 (CH-53)



S-64 (CH-54)



S-64



S-65 (MH-53)

## The Sikorsky turbine driven Heavy Lift Helicopters were launched during the first half of the 1960s

The Sikorsky SkyCrane started as a company funded proof-of-concept program. Within a few years of development and demonstration, the U.S. Army and commercial operators were convinced that the Sikorsky SkyCrane met their external lift requirements and a total of 99 aircraft were produced and delivered.

Sikorsky Aircraft eventually sold the design and production certificates to Erickson Aircrane in 1992. Erickson converted military surplus CH-54A and CH-54B aircraft to their Aircrane version for worldwide sale. The Sikorsky SkyCrane concept continues to be a productive aircraft. ☺



Artist conception of S-95 (CH-53K)

Dr. Kenneth Rosen's paper defines the engine power to weight improvements developed over the years. The power available improvements provided the capability to develop efficient cabin helicopters that had the flexibility to provide both internal as well as external heavy lift missions without changing configurations required for a SkyCrane.

The U.S. Marines were interested in a heavy lift cabin helicopter during this period and awarded Sikorsky the two engine H-53 contract. The three engine H-53 was subsequently produced. A total of 522 twin engine and 134 three engine H-53s were delivered. The success of these models in service has resulted in the current contract to develop the CH-53K heavy lift helicopter, which has the potential of becoming a 100,000 pounds gross weight helicopter in the future. ☺

## Join the Sikorsky Archives

Help Us Preserve the Igor Sikorsky Heritage

Igor I. Sikorsky Historical Archives Inc.

MS S 578A

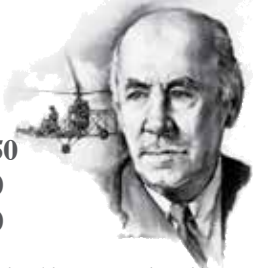
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Life Membership \$250

3 Year Membership \$50

1 Year Membership \$20



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Name \_\_\_\_\_

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City \_\_\_\_\_ State \_\_\_\_\_

Zip \_\_\_\_\_ Phone \_\_\_\_\_

Are you interested in archiving?  Yes  No

A 501 (C) (3) Non Profit Organization



### Archive exhibit at FAMILY DAY 2014

The majority of our work is done by our volunteers, but preservation of drawings and valuable legacy data must be done by professionals at considerable cost which continues to escalate. Please consider joining for a three year or life membership level to help our costs associated with the preservation of documents and media, and cataloguing the data which is constantly growing so that it can be retrieved in future years. We have found it necessary to increase our dues for the first time since the Sikorsky Historical Archives was formed in 1995. This increase in dues will be effective January 15, 2015. ☺

*Newsletter designed and edited by Lee Jacobson and Sikorsky Archive Members with graphic assistance by Edgar A. Guzmán*



### Igor Sikorsky's comments after the early flights of the VS-300 Helicopter:

“During the very earliest flights we extensively used slow motion filming and this was for two reasons. One, the ship was rather unsteady and the slow motion changed this to a considerably less risky and less bumpy flight. Another thing, due to slow motion the very short flights looked much longer, which was good. Now a little later the slow motion no longer was necessary, because we could produce reasonably long flights?” ☺

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