Coast Guard Aviation SRR Program; APO Grand Prairie, Texas

1974 – Short Range Recovery (SRR) Program;

1979 - HH-65 Aircraft Program Office (APO) Established:

Notes: -The APO Grand Prairie article taken from the copyrighted Chronological History of Coast Guard Aviation 1915 – 2010 written and edited by Coast Guard Aviation Association (Pterodactyl) Historian John (Bear) Moseley USCG Aviator #743 was used as a baseline. The following corrected/expanded version is based on written input from VADM Howard Thorsen USCG (Ret), RADM Robert Johanson USCG (Ret), Capt Sperry Storm USCG (Ret), Capt Paul Garrity USCG (Ret), Cdr Dave Young USCG (Ret), Cdr Jim Szymanski USCG (Ret), CWO Richard Smallwood USCG (Ret), and Mr. George Lowe, Coast Guard Contracting Officer, (Ret). This version was assembled and edited by Capt Storm.

-Cdr Szymanski is the first designated HH-65A Aircraft Commander.

-Some portions of this paper are based on contemporaneous notes and the contributor's recollection of what took place, and are included for the sole purpose of historical perspective.

In the summer of 1974, recognizing that the venerable HH-52 fleet would require replacement in a few years, the Commandant established the 'SRR Aircraft Characteristics Board' (ACB).

The members were: Capt Chuck Larkin, Cdr Howie Thorsen, Cdr Bob Watterson, Lcdr Don Aites, and Lcdr Pete Poulis. The ACB researched then-current small helos, including attending the Farnborough Air Show in England. After considering the historical performance of the H-52, the ACB developed a list of seventeen characteristics necessary to meet required mission performance, as follows:

1. Radius of action-150 nm; 30 minutes on station, with fuel reserve

2. Range-400 nm

3. Cruise speed-100 kts (min.)

4. Endurance-3.5 hours, plus reserve

5. Rescue capability-3 persons at max radius of action

6. Litter capacity-required

7. Rescue hoist-600 lb capacity

8. Passenger capacity-6
9. Power Plant-twin turbine engines
10. Operating environment-all weather maritime; semi-tropical to arctic
11. Flight controls-dual
12. Avionics-navigation/communication/detection
13. Size-operate from flight-deck equipped Coast Guard cutters; fit two in icebreaker hangars
14. Weight-10,000 lbs (max)
15. Shipboard maintainability-as required for program
16. Fueling-gravity and pressure
17. Cargo sling-2,000 lb capacity

Justification for each stand-alone item presented a challenge. After various efforts proved inadequate, the ACB concluded that several scenarios, based on actual HH-52 flights, would collectively justify all seventeen, in order to accomplish the missions.

During a briefing for the Commandant, Vice Commandant, and Chief of Operations, in May, 1975, these characteristics were shown to be appropriate for one or more of the regular missions being flown, and all were immediately approved . Having a Commandant-approved list proved to be greatly beneficial during the steps leading to the acquisition process, when attempts were made to add additional requirements, the proposer would be informed that any additions would require approval by the Commandant….and there were none.

In the summer of 1977, the go-ahead was given, and the SRR Source Selection Advisory Committee (SSAC) was formed, under then Capt Howie Thorsen, who was reporting for duty as G-EAE after graduating from The Industrial College of the Armed Forces. He was designated the SRR Project Officer and led a small team consisting of the following members: Cdr Jim Butler, Lcdr Dave Young, Lcdr Dave Jones, Lcdr Jim Szymanski, and CWO4 Lowell Andrews.

The first order of business was to draft the Request for Proposals (RFP). Acknowledging the magnitude of the task, and the lack of in-house expertise, the Coast Guard requested the assistance of the Naval Air Systems Command (NAVAIR) not only for advice in preparing the RFP, but also to provide an independent evaluation of all candidate helicopters. With extraordinary cooperation and an eagerness to help, the most highly regarded civilian in NAVAIR, Mr. George Spangenberg, lent his personal

support. A Coast Guard office was established in NAVAIR; a SRR 'Class Desk' formed, and the SRR Program was supported in the same manner as any Navy/Marine aviation acquisition program.

The RFP was issued in September of 1977 with a Coast Guard decision on the new helicopter planned for August of 1978. Offerors were required to have an actual flying, certified helicopter as a 'base' design. Three companies which responded to the request were: Textron Bell Helicopter, with a utility version of its Model 222; Sikorsky Aircraft, with a version of its S-76 Spirit; and Aerospatiale Helicopter Corporation (AHC), with a modified version of its SA365C.

Through NAVAIR, the Coast Guard worked with the U. S. Naval Air Test Center Patuxent River, Maryland (NATC) to conduct limited quantitative flight evaluations on the aircraft the bidders would make available. Additionally, the Coast Guard would conduct separate qualitative flight evaluations. Each aircraft was instrumented for a variety of flight/handling parameters and had assigned NATC and Coast Guard teams. The NATC evaluations were completed in 15 flight hours for each aircraft, and their reports suggested additional specification requirements. The Coast Guard teams conducted shorter qualitative evaluations of five flight hours each. The Coast Guard teams were: Bell 222, LCDR Don Wittschiebe; SA365C, LCDR Tom McLaughlin; S-76, LT Joel Thuma. LCDR Jim Szymanski and CWO2 John Reid participated in all Coast Guard flights of each aircraft. Capt Howie Thorsen and CDR Jim Butler flew each of the candidates, for familiarization purposes.

All three candidate aircraft were ultimately found to varying degrees to meet the RFP specifications. The S-76 was rated the overall best qualified machine (primarily because of its' large cabin space), the 365C handily met all requirements, while the 222 was marginal in several aspects. The long near-total experience and working relationship between the Coast Guard and Sikorsky Aircraft added to a feeling that the next SRR helo might continue to carry the Sikorsky brand.

The last step in the formal acquisition process would be the 'Best and Final' submission by each manufacturer, showing their final bid. Although it was a 'best value', not a 'low bidder wins' contract, price was assumed to be a heavily weighted factor- the other two being the candidate aircraft evaluation results and the established history of credible business practices by the manufacturer. The percentage weight of these three factors had been established by a Source Selection Advisory Board (SSAB) which had been established by the Secretary of Transportation in the approval of the acquisition process. The board consisted of three members: one from the Coast Guard (RADM Ben Stabile, Chief Office of Engineering); one USN Rear Admiral from NAVAIR RADM George E. Jessen, an experienced Naval Aviator with background as the S-3 aircraft Program Manager; and one civilian from the Department of Transportation. That board had met, early in the process, to determine the specific percentages to which each of the three factors would apply; they then sealed the result which would remain unknown and unannounced until after the final presentation of the evaluation results and the 'best and final letters' by the SSAC to the SSAB. Ultimately, after applying the weights, the SSAB ranking of the offers would be presented to the Designated Decision Authority (DDA)-the Deputy Secretary of Transportation.

The delivery of the Best and Final letters would mark the culmination of all the work and efforts of the SSAC, NAVAIR, and many others whose sole mission was to identify the best helicopter for future Coast Guard pilots and crewmen. The exact time and place for delivery of the letters was announced by the SRR Contracting Officer, Mr. A. J. Beard, several weeks before the date; late submittals would not be allowed. There was, understandably, great anticipation felt on the appointed date.

The Bell and Aerospatiale letters contained their final bid price. Sikorsky's letter had no pricing information; it merely stated that they were terminating participation in the SRR competition. The news of the withdrawal of Sikorsky was a shock, not only to the Coast Guard but to the aviation industry. The SRR program would be the largest Coast Guard aviation procurement to that date, considering not only the original delivery of 90 helicopters, but also the included spare parts and logistic support. The selection of the Coast Guard's future short range helo would be a major endorsement of the selected helo for many years, both nationally and internationally. On another history note, we later learned Pierre Marion, chairman of AHC and the Aerospatiale representative in Washington, D.C. was so impressed with the proposal, he directed Mr. Jake Benner, president of AHC, to reduce the proposal price by the one million dollars that had been reserved for contingencies. In so doing, the AHC price became just a few dollars less than the Bell price. Not that it would have made a difference in the final selection, but it removed almost anything that could have favored Bell.

The Sikorsky decision to withdraw was made at the last possible minute. The emissary who flew to Washington from Connecticut, that day, had two letters in his suit coat, with orders to proceed to the lobby of the HQ building at Seventh Avenue and D Street. He was then to call Mr. Jerry Tobias, President of Sikorsky Aircraft, (at his office in Connecticut) who would instruct him which letter to submit. (The other letter was their Best and Final offer). Years later, we learned that the decision to withdraw was based on their business forecast of an expected large increase in off-shore drilling, worldwide, thus a huge market for the S-76, which had been designed for the express purpose of carrying ten oil rig crew members to and from land (thus, the large cabin space). Anticipating a very large number of helos to be produced for the commercial market during the same years the Coast Guard required a significant delivery rate of the SRR; considering the capacity of the production line and the lesser margin of profit which was dictated by the SRR competition, the business case called for the withdrawal. (Unfortunately for Sikorsky, the expected boom in offshore drilling did not materialize for many years.) Both remaining competitor's helos had been evaluated as acceptable, so the acquisition process could proceed.

With all acquisition activity completed, the SSAB was briefed by the SSAC, and the briefing for the Deputy Secretary of Transportation (DDA) was scheduled for 14 June 1979. The briefing material was prepared; to be presented by Mr. Spangenberg, as the most knowledgeable acquisition person involved. On that date, with members of the SSAC and SSAB assembled, word was received that the DDA was running late and he would have only ten minutes available for the briefing. A quick shuffle of the PowerPoint slides by Mr. Spangenberg, and he was ready when the DDA arrived. The briefing went

without a hitch, the SSAB affirmed their findings, and the session was ended without any indication by the DDA, which aircraft would be selected for contract award.

Later that afternoon, the Department released the news that Aerospatiale had been awarded the contract. Everyone felt a huge relief that our job was completed and the best available helo had been selected.

The SSAC was disbanded. Every member, with one exception, was under orders to a new assignment, most affiliated with the SRR Aircraft Program Office (APO). Cdr Jim Butler went to command Air Station Port Angeles and Capt. Howie Thorsen continued his duties as Chief of Aeronautical Engineering, with the SRR project now underway and expected to be much less time consuming. The only remaining task was, as requested, to brief Bell Helicopter on the results of the evaluation of their candidate without releasing the evaluation results for either of the other two helos. Howie gave the briefing two weeks later, and the only comment from the Bell group was that they thought the Coast Guard had been generous in evaluating several areas of performance.

Within a few weeks, Bell filed a protest with the GAO and filed suit in Federal District Court, seeking to block any Coast Guard action to proceed under the terms of the contract. In a rather short time, GAO ruled in the Coast Guard's favor. The law suit would not be settled in the near term, but there was no delay or change by the Coast Guard in proceeding to acquire the helicopters.

Despite the fact that this was a 'best value', not 'low bid', contract, Bell's lawsuit was aimed at disqualification of the Aerospatiale bid. The basis for the challenge by Bell was that the Aerospatiale offered helo, did not meet the provisions of the Buy America Act, thus the determination of the 'effective' pricing had not, accordingly, been raised and incorporated for consideration of the final bid. The operative term is 'domestic end product'. Was a sufficient part of the total cost of the helicopter being purchased considered to be an American product (either produced or assembled in the USA), therefore, a domestic end product, so the provisions of the Buy America Act would not apply?

The Coast Guard was assigned a lawyer from the Justice Department, and the Bell suit was adjudicated in the Federal District Court in the District of Columbia. The relationship between Capt Thorsen and the Department of Justice (DOJ) attorney was not smooth, with infrequent communications the norm. Howie was expected to drop his other responsibilities (he was also the project officer for the Falcon acquisition, there was an APO in Little Rock for the Falcon program, and FAA certification of the Garrett ATF3-6 engine was not going well, not to mention the normal EAE business involving current aircraft), and provide information to meet an about-to-occur deadline. Months would pass, with no activity; then, on very short notice, 24 hours or less, a legal statement or explanation of specifications or processes would have to be prepared and presented to the court. After more than 12 months, oral arguments were heard in District Court of the District of Columbia on 8 May 1980. The judge, Joyce Hens Green, ruled in favor of the Coast Guard on 30 May, and the last challenge to the SRR contract ended.

Eighteen days later, Howie departed for his next assignment, and Captain Bob Johanson soon assumed the position of G-EAE.

The Coast Guard contract specifications reflected very ambitious schedules. The Helicopter was to be U.S. FAA certified under Part 27, which had to be coordinated with the French FAA (DGAC). Each airframe was assembled for initial certification purposes at Aerospatiale Division Helicopter (A/DH) in France using certain 'slave' equipment such as engines, main gear box and other equipment supplied by AHC in Texas. After it was flown in France to satisfy A/DH and DGAC it was partially disassembled for shipment, and the 'slave' equipment removed to be used on each subsequent airframe.

The airframe, a derivative of the basic Sud Aviation SA 365A was considered a new airframe and thus required a Type Certificate (TC). The Lycoming LTS-101 engine, replacing the AS365 Turbomeca Arriel engine, was a tried and true power source for many fixed wing airplanes, but was also new to the helo and thus needed its own TC. The AHC aircraft, now designated SA366G was considerably smaller than the HH-52 it was to replace and space for all equipment was at a premium. The Coast Guard provided an avionics specification detailing the capabilities and in many cases the exact equipment to be used. The helicopter was to be certified for single-pilot IFR flight and be the first helicopter so certified with a four-axis autopilot.

The Aircraft Program Office (APO) for the SRR contract was established soon after the contract was awarded in 1979. Cdr Dave Young was the original Commanding Officer. Subsequent CO's were Cdr Don Wittschiebe, Cdr Sperry Storm, and Cdr Bud Tardiff. The APO was structured like the first Coast Guard APO in Little Rock, Arkansas for the MRS HU-25 Falcon program. The APO provided support for administering the contract with a civilian Contracting Officer, Mr. George Lowe and clerical staff, in addition to pilots and aircrew personnel. Like other APO's, the organization was similar to that found at Coast Guard Air Stations, (CO, XO, OPS, EO, ADMIN) with an independent Contracting Officer reporting separately to the Headquarters Acquisition Staff. The APO performed the duties of the Contracting Officer's Technical Representative (COTR) therefore all correspondence and formal communication with Contractors was done through the Contracting Officer.

AHC's original facilities were located at the Vought Helicopter Corporation which operated for a short period as a licensee of A/DH. In 1979 AHC built its own plant facilities in Grand Prairie, Texas. The APO was provided dedicated space. The assigned personnel were involved from the beginning, attending not only the formal program reviews but visiting A/DH in France, Lycoming in Williamsport, Pa, Rockwell Collins in Cedar Rapids, Iowa, the FAA lead region for helicopter certification in Ft. Worth, TX, and the FAA Lead Region for Engine Certification in Boston, MA.. The formal reviews consisted of a post award meeting, a Preliminary Design Review, Critical Design Review, and monthly program/progress reviews.

In an effort to gain early Coast Guard approval of the proposed configuration, AHC fabricated a full-sized mockup for use at the Critical Design Review. The cockpit was fairly well designed and was modified by inputs received during reviews at Rockwell Collins and the Preliminary Design Review. In addition, various equipment such as a litter, rescue basket, trail line, float lights and pumps were utilized to allow crew members to work through the necessary cabin operation scenarios. The interface between the hoist operator and his various controls received considerable input that was incorporated into the final configuration. The use of the mockup enabled the contractor and major vendors to rapidly move out with prototype builds. Three Helicopters were used in flight tests. Two were flown to obtain DGAC certification in France and then through reciprocity the U. S. FAA certification. The third was used in the United States to prove the avionics installation. Eventually all three were flown out of Grand Prairie.

As the program progressed, in accordance with the Contract, APO personnel became involved in component development, testing, and conformity to specification as the aircraft went down the production line. As required by the Contract, the APO conducted acceptance inspections and acceptance flights. The APO was responsible for developing maintenance procedures using data that was deliverable under the Contract. Additionally, the APO took the lead in managing the minimum stocking list for the initial spares for each Air Station before they became operational. Management of the initial training of maintenance personnel provided at the Grand Prairie facility under the Contract by AHC was handled by the APO.

During test and acceptance, many major and minor problems were identified by the APO and eventually corrected by AHC before acceptance. Among those that were found to be non-specification compliant in the early production aircraft were the following:

-The aircraft could not meet the minimum required in-hover sideward flight maneuvers.

-Engine compressor stalls in snow.

-Insufficient avionics cooling.

-Lack of interchangeability of parts between aircraft.

-Radar Altimeter cycling in coupled hover over water.

The correction of these problems as well as others was not without contractual dispute, which resulted in claims, and counter claims, which subsequently resulted in a negotiated settlement, which included tradeoffs for an increase from 90 to 96 delivered helicopters, adjustments to delivery schedules as well as costs for improvements required to meet the specifications. The first of 96 HH-65's was accepted for service by the Coast Guard on 14 November, 1984.

During production and acceptance, the APO remained on site, and a separate office known as the Special Projects Office, consisting of government attorneys, and selected technical staff led initially by Cdr Don Wittschiebe were located nearby. This was done in order to litigate without interfering with day to day APO and AHC operations. The original civilian Contracting Officer, Mr. George Lowe was also a part of this group.

The APO remained in place until after the acceptance of the last aircraft in 1989.

The major fault following the aircraft into operation was the engine. A combination of an aircraft with a basic gross weight almost 600 pounds heavier than predicted in the specification and the LTS 101-750 engine, whose longevity was compromised by poor manufacturing tolerances and component material problems resulted in an underpowered aircraft.

Separate from other contract issues, the Coast Guard began investigating engine performance deficiencies and had contemplated a contract claim against AHC as prime contractor. However, before the claim was fully defined, reduced to writing and in final format, an employee of AHC filed a 'whistle blower' Qui Tam suit against Lycoming. As a result of this action, the U. S. Department of Justice (DOJ) assumed the lead for all engine related problems, with the Coast Guard providing the technical expertise at negotiations.

This law suit had little to nothing to do with the engine performance, but instead was based on the delivery of engines with improperly manufactured components with metallurgical defects, and deficient documentation. Although the prototype LTS-101 750 A1 engines performed flawlessly during all FAA certification tests, as witnessed by USCG, FAA and Lycoming representatives, the production version of the engine had performance problems because of metallurgical problems with internal engine component materials compounded by an inability to maintain very tight manufacturing tolerances during mass production. As a result, the delivered engines had minimal performance margins, which were depleted in a matter of tens of hours rather than hundreds or thousands of hours.

A powerful argument in the Qui Tam suit was Coast Guard evidence that the engine gas producer (GP) turbine blades were 'unwrapping', that is changing the angle of incidence to the gas flow path when exposed to normal operating temperatures. This caused the efficiency of the GP Turbine to decrease as the blades unwrapped. Since the USCG Aircraft Repair & Supply Center (AR&SC) was re-blading GP modules, they had a collection of over 1500 GP blades. The AR&SC team measured the angle of incidence of each removed blade, recorded the time installed for each blade, and graphed the

blade unwrap verses time. This data provided a predictable correlation between GP blade operating hours and amount of blade unwrap. The greater the unwrap, the less efficient the GP blade and thus the GP module became. Lycoming made an argument about the confidence factor of the sample, but when explained in court that the data came from the entire population, rather than a sample, the judge agreed that the confidence factor of the data was 100%. This was a major factor in the government's case.

Another factor was that the Power Turbine (PT) Wheel, a blisk with the wheel and blades cast as a single unit, experienced cracks at the blade to turbine wheel interface because of unequal cooling during manufacture, causing PT blades to separate during operation, resulting in engine failures. This defect was very easy to prove, and added another big bonus to the government's claim for compensation.

DOJ assigned a very junior attorney to pursue this case, who was a very quick study concerning the technical issues involved, and whose passion and energy were significant factors in the success of this litigation, which resulted in a six year Power by the Hour Overhaul and Service Agreement to be provided to the Coast Guard by Lycoming and a monetary settlement to the U. S. Government of $17M. The final action on the 'whistle blower' Qui Tam suit resulted in the largest Qui Tam settlement recorded at the time.

The LTS 101-750 engine was eventually replaced by the more powerful Turbomeca Arriel 2C2-CG and the HH-65 underwent a service life extension and became the Multi-Mission Cutter Helicopter.

Summary of HH-65 Helicopter Models

HH-65A

Initial USCG version, powered by two 734 shp (547 kW) LTS101-750-B-2 turbo shafts and with an 8,900 lb (4,000 kg) M.T.O.W.

HH-65B

Avionics upgrade undertaken on a portion of the fleet. Retrofit included an Night Vision Goggle (NVG) compatible integrated flight management avionics suite consisting of two GPS-embedded CDU-900G control display units and two MFD-255 multifunction flat panel displays. The HH-65B upgrade was undertaken at the Coast Guard's Aircraft Repair and Supply Center (ARSC) in Elizabeth City, NC, with the first aircraft rolling-off the programmed depot maintenance (PDM) line in March 2001.

HH-65C

HH-65A/B upgraded with new 934 shp (696 kW) Arriel 2C2-CG engines that provide 40% more power and higher performance, plus an upgraded tail gearbox, long-nose avionics compartment, increased 9,480 lb (4,300 kg) MTOW,

expanded lateral flight envelope and Vehicle and Engine Multifunction Display (VEMD) with First Limit Indicator (FLI). First retrofit completed in October 2004.

MH-65C

Initially intended only for use by the Multi-Mission Cutter Helicopter (MCH), a further enhancement of the HH-65C within the USCG Deepwater effort, includes a 10-blade low-noise Fenestron, relocated avionics, and an airborne use of force package (in common with that of the modernized HH-60T) will provide the capability to fire warning and disabling shots from the air. The MH-65C designation is now also applied to HH-65Cs used in 'airborne use of force' missions, such as the Helicopter Interdiction Tactical Squadron (HITRON) mission taken-up by the MH-65C in early 2008. The HITRON aircraft are armed with the Barrett M107CQ 12.7 mm anti-materiel rifle and M240G 7.62 mm machine gun. Note: The 10-blade tail rotor was not unique to the MH-65C change. The addition of the 10-blade tail rotor became a necessity due to the obsolescence of the older tail rotor blades.

MH-65D

MH-65C with an upgraded flight navigation system common to Department of Defense helicopters. The first production MH-65D was completed on January 20, 2011 and is fitted with a Honeywell HG7502 radar altimeter, two Honeywell H-764G EGI's (embedded GPS/inertial navigation systems) and two control display units CDU-7000D from Rockwell Collins. All H-65s will be upgraded to MH-65D standard with a target completion date of 2015.

MH-65E

The MH-65E will incorporate upgrades that will modernize the cockpit by installing digital ‘glass’ cockpit instruments, known as the Common Avionics Architecture System (CAAS), similar to those installed in the Coast Guard’s upgraded MH-60T Jayhawk Medium Range Recovery (MRR) helicopters. The Echo upgrade will also replace the legacy analog automatic flight control with a digital system, and installing a digital weather radar system. The MH-65E model is expected to begin to be delivered to the fleet in FY 2015.

The Coast Guard is planning projects to extend the useful life of the HH-65 until 2027.