The ClipperSpirit™ Project

Volume 1

Program Briefing

CLIPPERSPIRIT AVIATION

AURORA . AQUARIUS . CARINA

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1 The ClipperSpirit™ Project

The ClipperSpirit Project is the design and FAA certification of the first new amphibious seaplane in 50 years for the regional airline, charter, cargo, private owner, and government special use markets.

There was time the long-range oceangoing seaplane was the cutting edge of aviation technology.

Pioneering designs lead to many advances in structures, powerplants, and long range navigation. NACA, the predecessor to NASA, carried out nearly 300 research studies associated with hull design alone. Some of this research during WWII was so advanced it was classified as a military secret.

Seventy years later, mention the Pan-Am Clippers and people still have a vision of these planes departing San Francisco Bay, headed out over the Golden Gate Bridge for destinations in the far east. Or the bustle of the LaGuardia Marine Air Terminal with travelers headed to Europe or destinations south. Hawaii, the Orient, Australia, Alaska, Mexico, Cuba, the West Indies, Europe, South America. These great aircraft launched the airline industry and shrunk the world…

Whether it's a sightseeing in the Florida Keys, or flying to a vacation resort "down island", perhaps it's a fishing trip in the wilderness of Alaska, or for some it's treating friends to flight on a private aircraft with a unique experience. Whatever the adventure, the ClipperSpirit will recreate the magic of a bygone era.

So where did all the seaplanes go?

- The advent of military helicopters with aerial refueling capability and the development of long range land-based aircraft led to the demise of the transport class seaplane.
- Advances in structural engineering design and the development of landing gears strong enough to support large, heavy aircraft led to long range land-based aircraft. The 747 weighs almost a million pounds fully loaded and sits on 3 legs.
- Operating oceangoing seaplanes utilizing conventional aluminum designs is simply too costly.

What's different now?

- With the development and acceptance of advanced composite materials such as carbon fiber in aircraft construction, it is now possible to build a seaplane that's economically viable to operate.

How come no one else has thought of this?

- The aerospace industry is very conservative and evolutionary in it's adoption of new technologies and design paradigms. Jet engines have replaced radial piston engines and aircraft structures are lighter and stronger than in the past, but the structural design of the new Airbus A380 doesn't look much different from the Lockheed Electra 10 designed in 1934.
- With the consolidation of the transport class aircraft manufacturing base to Boeing, Airbus, Embraer, and Bombardier, the entire industry is trapped in their institutional knowledge and expertise in bending aluminum into airplanes. Only Boeing is beginning to adopt the use of composites in the design of the new 787 Dreamliner.
- The market is sizeable, but not big enough to interest the likes of Boeing or Airbus. As Detroit has all but abandoned the small, fuel-efficient car market to the Japanese, Boeing and Airbus have abandoned the 100 passenger and smaller regional jet (RJ) market to the likes of Embraer and Bombardier because they can't compete on cost. And the RJ market is measured in thousands of airplanes.
- Embraer is busy chasing the Very Light Jet (VLJ) market and growing their existing bizjet and RJ product lines. Bombardier is no longer having much success in the RJ market, competing against Embraer and is considering leaving it. Without the Canadian Government subsidies it receives, it would probably leave the bizjet sector also.
- Actually they have. The Russian seaplane company, Beriev sees a market too. However, the conservative nature of the worldwide market wants a Western designed and certified aircraft.

This is a market for a small, cost-efficient, and nimble company with a design utilizing composite materials for the airframe structure.

2 Project History

In 1999, at the behest of several clients, Mr. Charles Simpson, founder of The New Nose Company, Inc., began exploring re-engining the Grumman Albatross seaplane with modern turboprop engines. At the same time Mr. Len Curreri was exploring the possibility of re-engining the PBY-5A "Catalina" seaplane with turboprops. In April of 2001, Mr. Simpson and Mr. Curreri informally joined forces to pursue the development of a "turbinized" seaplane for the airline, charter, and private owner operator markets.

After a number of discussions with potential operators and several engineering design studies, Mr. Simpson and Mr. Curreri decided to pursue a new "clean sheet" design that would offer more capability and broader appeal. The ClipperSpirit will be designed from the keel up to satisfy customer requirements, the technical challenges of salt water operations, and FAA certification. The new design incorporates advanced carbon fiber composite airframe construction, proven engines & props, and modern avionics from established manufacturers minimizing the program risk exposure and shortening the time to market.

3 The ClipperSpirit Family Of Aircraft

All models will utilize the same basic airframe design. The goal is to offer a variety of interior configurations to meet the needs of several markets without altering the basic structural configuration of the aircraft. Based on the results of a brand study we selected Carina, Aurora, & Aquarius as the names for the 3 aircraft models representing the 3 different interior appointments.

3.1 Carina

The Carina will be the first model offered with the interior design tailored to meet the requirements for the regional airlines and charter markets.

3.2 Aurora

The Aurora will feature interior arrangements for the private owner and will include custom seating configurations, upgraded quality of finishes and materials, and added cabin entertainment equipment. Typically, each interior configuration will be unique and tailored to the specific requirements of the owner.

3.3 Aquarius

Follow-on adaptations of the interior will include configurations designed to handle cargo loads and Government special use missions, including interiors configured for maritime patrol & rescue, surveillance, and security force transport. An engineering study is also planned to develop the ClipperSpirit as an aerial forest fire fighting tanker.

3.4 Design Goals

Designed from the inside out, the ClipperSpirit will be ideally suited for airline, charter, cargo, owner operator, and special use roles. It's state-of-the-art design, includes: advanced composite material construction for the airframe structure, modern avionics featuring the latest technologies for enhanced situational awareness & safety, and the proven reliability & durability of turboprop engines.

The design goals encompass:

- Economically Viable Operating Costs
- Durability & Materials Suitable For Salt Water Operations
- Use Of Proven Modern Technologies
- Design For FAA Certification
- Design For Maintenance
- Keep It Simple – Don't Re-invent The Wheel

3.5 Preliminary Specifications

The preliminary design specifications for the aircraft are:

FAA Regulations	Design Certified to FAR 25 Designed For Operations Under FAR 121 / 135 / 91 Day/Night VFR & IFR Operations Single Pilot Operation Under FAR 91 Remote Area / Oceanic Ops Requirements (RNP-10 / RNP-4) *No Certification For Flight Into Known Icing Planned* *No Certification For RVSM Planned*	
Customer Requests	Operations in Seas to 3 ft Wave Height Designed For Salt Water Ops Airline Operational Legs Of 100 sm – 300 sm Built-in Engine Wash System Larger Than 19 Pax, Around 30 Pax Desired Pratt & Whitney Engines 6 ft Cabin Height with Flat Floor Oversized Door for Cargo / Bulk Items Simple Systems Low Operating Cost	
Engines	P&W PT6A-67T or -67R Bleed Air Inlet De-Icing	HI TPE331-14GR/HR Bleed Air Inlet De-Icing
Propellers	Hartzell 5 Blade 115” Dia Aluminum Construction Reversible / Auto Feathering Electrically De-Iced	McCauley 5 Blade 114” - 108” Dia. Aluminum Construction Reversible / Auto Feathering Electrically De-Iced
Environmental Systems	Un-Pressurized Vapor Cycle Air Conditioning System	

Avionics	Collins Proline 21 Integrated Avionics Suite 4 LCD Flat Panel Cockpit Displays (8” x 10”) – EFIS / EIS / IFIS Dual Goodrich Smartprobes (Air Data Sensors) Dual Attitude & Heading Reference Sensors (AHRS) Dual 8.33 kHz VHF COM Radios Single HF COM Radio Dual NAV Radios (ILS/VOR/MKR) Single DME Dual WAAS GPS Receivers (primary means of navigation) Dual FMS (Required to meet remote area / oceanic ops) Dual Mode S Transponders TCAS (I or II) EGPWS / TAWS (Class A) WX Radar Single Radio Altimeter Autopilot / Flight Director Electronic Jepp Charts Controlled / Restricted Airspace / High & Low Level Airways XM Satellite Weather (CONUS) or Universal Weather Service (Worldwide) Maintenance & Diagnostic System 121.5 / 406 MHz ELT CVR FDR L3 GH-3100 or Meggitt SFDS Mark 2 Standby Indicator			
External Dimensions	Wingspan Wing Area Length Height Beam Draft	96 1008 66.5 26 9 30	ft ft^2 ft ft ft in	These dimensions are estimates pending the final interior sizing & preliminary design calculations
Cabin Dimensions (Sized For 24 Pax)	Width Length Height	84 280 75	in in in	2 x 1 seating with 20” aisle 8 rows with 32” pitch Flat floor
Baggage Capacity		281	ft^3	11.7 ft^3 / Pax
Weight	Max Takeoff – Land Max Takeoff – Water Max Useful Load	33,000 33,000 12,000	lbs lbs lbs	
Payload	Max Payload With Full Fuel 24 Pax 27 Pax FAR 91 Ops	6,000 7,200 8,100 6,000	lbs lbs lbs lbs	FAR 91 limits Payload to 6000 lbs max, greater than 6000 lbs FAR 125 govern Ops
Range (with 45 min Reserve)	Max Fuel Capacity 24 Pax 27 Pax FAR 91 Ops	1,000 900 750 1,000	nm nm nm nm	

Fuel Capacity	Max Tank Capacity 6,000 lbs (938 gal / 126 ft^3) 24 Pax 4,800 lbs 27 Pax 3,900 lbs FAR 91 Ops 6,000 lbs
Cruise Speed (At 10,000 ft)	200 Knots Standard Day Conditions
Fuel Flow (Cruise)	1005 lbs/hr (150 gal/hr)
Service Ceiling	25,000 ft
Single Engine Ceiling (30,000 lbs)	12,500 ft
Performance Design Goals	V_{Max} 250 Kts V_{Cruise} 200 Kts @ 10,000 ft $V_{Stall\ 0\ Flaps}$ 80 Kts $V_{Stall\ Full\ Flaps}$ 70 Kts $V_{Takeoff}$ 85 Kts
	Takeoff Distance Over 50' ≤ 3500 ft S/L Rate of Climb ≥ 1500 FPM at Max Gross / ISA – SL / 0 Single Engine R/C ≥ 350 FPM at Max Gross / ISA – SL / 0
	Key ISA Points Used For Design Evaluation ISA SL / 0° ISA SL / +15° (Key West) ISA 5K / +20° (Denver) ISA 10K / 0° ISA 10K / +10° ISA 25K / 0°

4 FAA Certification & Production Approval

The ClipperSpirit will be the first carbon fiber composite, twin turbo-prop amphibious seaplane certified to FAA Transport Category Regulations. While new as a seaplane, virtually all of the major components are proven and certified on other aircraft. Carbon fiber construction is used in number of airframes, mostly in the General Aviation market and as sub-assemblies such as control surfaces and fairings for Transport Category aircraft. As for carbon fiber's suitability in saltwater, it is the material of choice for virtually all high performance sailboat and yacht hulls. The engines and propellers are used on a number of aircraft, with over 25,000 PT6 engines in-service today. And the avionics suite is one of the most popular packages found on turbo-prop, bizjet, and regional airline aircraft today.

In order for an aircraft to be manufactured for sale in the US, the design must be approved by the FAA. This approval is granted when the FAA issues a Type Certificate (TC) for the aircraft design. The FAA grants the Type Certificate after extensive testing and analysis demonstrating the aircraft design complies with numerous performance, environmental, safety, and other technical design regulations. These regulations are enumerated in the Federal Airworthiness Regulations (FARs). The regulations governing the design of the ClipperSpirit are codified under FAR Section 25, Transport Category Aircraft.

Before an airplane can be legally flown in the US airspace it must be issued an FAA Airworthiness Certificate. An Airworthiness Certificate is issued to a specific aircraft after it is inspected by the FAA and is found to have been built in accordance with the design specification approved under the Type Certificate.

A manufacturer may apply for an FAA Approved Production Certificate which allows the manufacturer to conduct it's own inspection of the aircraft it builds and issue the Airworthiness Certificate. The FAA only grants a Production Certificate after the manufacturer has demonstrated they can accurately and repetitively build the aircraft to the design specification of the Type Certificate. The manufacturer must also demonstrate they have adequate manufacturing process control, quality inspection, and parts inventory control processes in place.

5 Business Strategy

ClipperSpirit Aviation's objective is to establish itself as the world leader in the design and development of Transport Category seaplanes. At this time there are no aircraft manufactured for this market.

Our strategy is:

- Develop one airframe with broad mission profiles to maximize the return of engineering design & FAA certification dollars.

- Introduce state-of-the-art materials technology, structural design, propulsion, and avionics to the seaplane market.

- Bring to market an airframe at a price point that is economically viable for the regional airline market.

- Utilize a joint venture with a skilled 3rd party manufacturer with existing FAA Production Approval to build the airframe. This approach significantly reduces the investment dollars required and capitalizes on the excess manufacturing capacity available.

- Capitalize on the company Founder's extensive expertise in design, certification, and operation of seaplanes.

- Expand the Management and Engineering teams with talented individuals who embrace the Founder's vision of the ClipperSpirit and will successfully execute it. A number of key additions to the team have already be identified.

- Contract with experienced vendors to supply major design items such as engines, avionics, landing gear, and the structural design and analysis.

- Utilize an integrated design team approach. Engineering must design what the Customer wants, Marketing needs to know and understand the product they're selling, and if Manufacturing can't build it, there's nothing to sell. There is also a brand image component to how "classic" or "modern" the ClipperSpirit engineering design ends up looking.

- Utilize the latest in Computer Aided Design tools to "virtually" design, build, and test the ClipperSpirit. Training in the tool's use is paramount. These tools are extremely powerful, but complex to use with a steep learning curve. Without the proper training these tools are just very expensive.

- Utilize physical testing to validate the design tools, not to prove the design.

- Develop a unified brand image for ClipperSpirit Aviation. We need to create an image and build a brand encompassing everything from business cards, stationary letterhead, to office furnishings, the company website, printed media advertising, even the interior design of demonstrator aircraft. We are selling an image as much as an airplane.

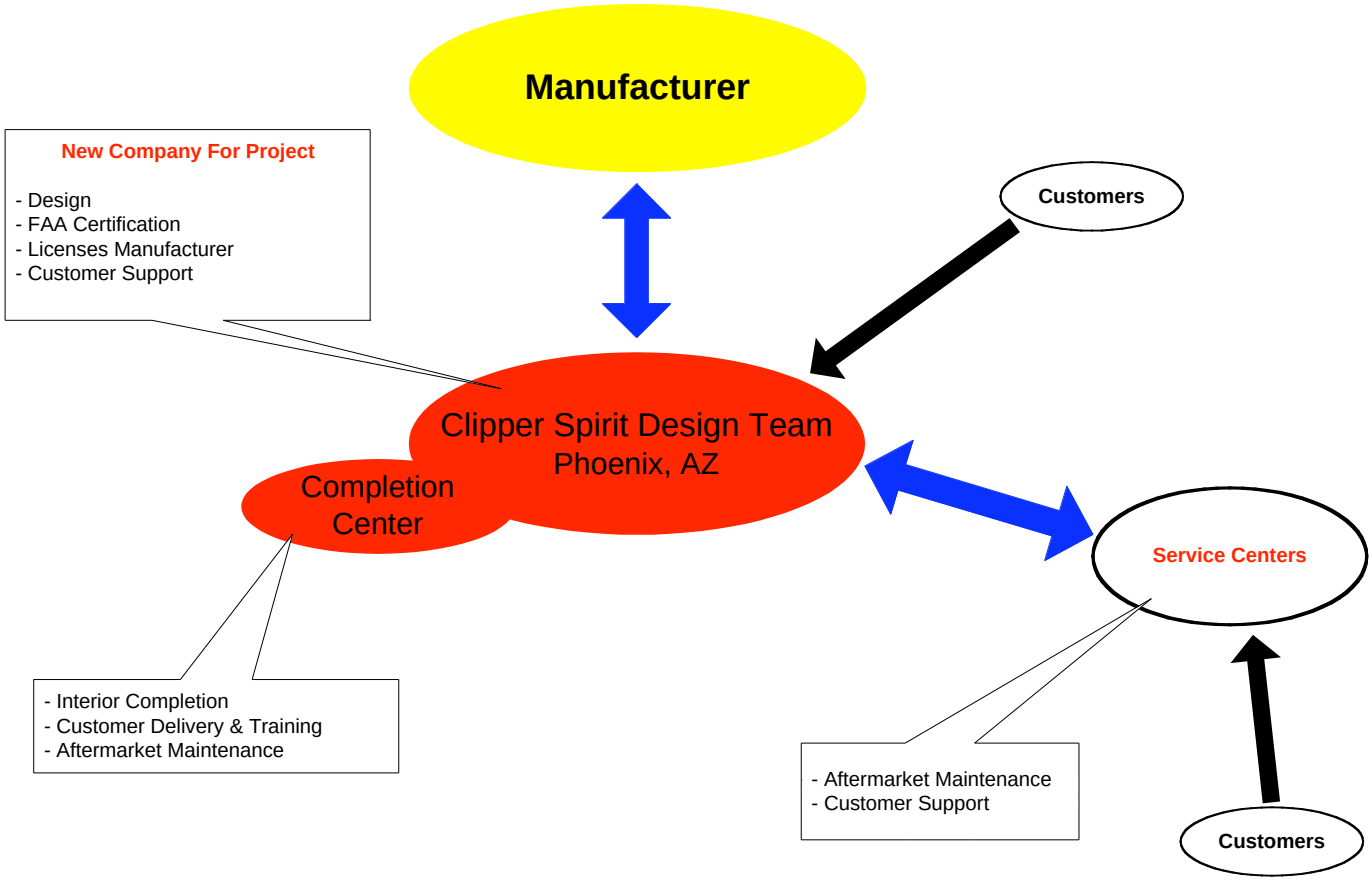
- The company needs to maintain an inventory of at least 1 aircraft configured for the "high net worth individual" market. This market segment is an impulse purchase. If the client is told they need to wait a year to get their plane, the sale will more than likely be lost. This purchase can just as easily be a sailboat, yacht, or exotic sportscar. Having an airplane they can take home today is key to closing the sale.

5.1 Business Model

The ClipperSpirit Aviation will design, market, and provide after-sales support & training for the company's line of seaplanes.

Manufacturing of the airframe will be a joint venture with a 3rd party manufacturer with expertise and FAA approval to build composite aircraft.

A network of regional Authorized Service Centers to provide additional support for the aircraft.



5.1.1 Manufacturing

ClipperSpirit Aviation foresees entering into a joint venture with a 3rd party manufacturer to build the airframe. We have initiated discussions with several existing companies with expertise manufacturing composite aircraft, however these companies prefer not to be publicly identified at this time.

5.1.2 Regional Service Centers

We envision licensing number of existing independently owned flight training and maintenance companies to serve as regional service centers. These service centers are crucial to the success of the ClipperSpirit, since they will provide scheduled and unscheduled maintenance, recurrent flight training, storage, and general servicing of the aircraft in accordance with each owners needs. The Company's philosophy is to assure each owner the best possible service, maintenance, and training available for their aircraft. We will closely monitor the service centers performance based on a number customer satisfaction metrics.

5.1.3 Training

Flight training will be a significant issue with the ClipperSpirit. We have held preliminary discussions with a firm that specializes in training, utilizing motion-based flight simulators to determine the requirements to build a state-of-the-art simulator that will offer ClipperSpirit pilots the capability of testing their skills under different Beaufort Scale sea states, docking, ramping, unforeseen water obstructions, along with flying skills, and emergency procedures. The visual display simulation utilizes satellite imagery local to the pilot's personal operating region.

This simulator-based training along with the extensive initial training provided to the flight crews should demonstrate significant risk reduction to the insurance community, leading to favorable insurance coverage for the operator.

5.1.4 Insurance

We have discussed both ClipperSpirit Aviation corporate and operator insurance needs with the Southeast Insurance Group, the largest insurance broker for commercial seaplane businesses. Southeast has offered to broker a comprehensive insurance package covering Product Liability, Aircraft Hull Insurance, General Business Property Insurance, Director & Officer E & O Insurance, and Worker Compensation. Southeast recommends carrying approximately $50 million in Product liability insurance.

They are also prepared to develop insurance packages tailored to the needs and experience levels of the owners and operators. Availability of insurance coverage is related to the quality of training and the minimum flight experience levels required to purchase and operate an aircraft.

5.1.5 Financing

Providing financing is an issue needs to be addressed and is an obvious component of a successful sale. Most OEMs offer financing through a wholly owned subsidiary. This is potentially another revenue stream for the company.

The VLJ OEMs have all developed comprehensive training, insurance, and financing packages to address the needs of their customers. These packages could serve as useful model for the ClipperSpirit and should be studied further. Without a structured training program, insurance will be nearly impossible to obtain, and without insurance no one is likely to finance the purchase.

5.2 Intellectual Property Protection

Under FAA regulations, the intellectual property of the design is protected indefinitely since only the Type Certificate holder, who is named on the document or legal licensees may use the data. All other parties must develop their own design data and go through the FAA certification process and be granted their own TC.

6 Market Evaluation

The estimated market for all variants of the aircraft is estimated at 500 airframes total. The market breakdown is approximately 200 airframes in the North America, Caribbean, & Western Europe market segments and approximately 300 additional airframes in the rest of the worldwide market.

The market potential is divided fairly equally between several niche market segments. The Company has partitioned the market into several segments as follows:

- Regional Airlines / Charter Operators / Resort & Travel Markets
- Personal / Executive / Corporate / Flying Club / Time Share & Fractional Markets
- Cargo / Off Shore Oil Operations
- Government / Special Use Missions

There is interest from military and foreign governments for special operations applications such as homeland security, maritime patrol, search & rescue, and drug interdiction.

Virtually every multiengine amphibious seaplane in flying condition is at least 40 years old and in most cases over 50 years old. Although some have been modified with turboprop engines such as the Grumman Goose and the Grumman Mallard, in all cases they are aluminum airframes and do not make very good salt water birds. They also suffer from outright parts unavailability to, at best, spares shortages. For instance, Chalk's Airlines has had to resort to manufacturing their own landing gear parts for their Grumman Mallards because spares simply don't exist.

It is the Company's goal to market the ClipperSpirit as an element of uniqueness and practicality in the aviation transportation market that hasn't been explored in many years and whose time has come again.

6.1 Regional Airlines

Several regional airlines that operate seaplanes have expressed support for the ClipperSpirit seaplane with Letters of Interest. Seaborne Airlines sees a need for 30 to 40 aircraft over the next ten years to support their growth plans. The majority of the airlines contacted by the Company have mentioned their growth plans are severely limited by the lack of available airframes. Assuring adequate and reasonable financing for the purchase or lease of airframes will be key to successfully developing the airline sales market.

6.2 Charter

The charter market is comprised of several facets, including conventional on demand passenger service, dedicated flight operations supporting the resort and luxury travel destination markets, just-in-time package delivery, and rural / remote area passenger and cargo delivery services. An amphibious design provides added flexibility to the markets and destinations that can be served from conventional commercial airports, the Alaskan bush country, or delivering a critical spare part to a ship at sea.

6.3 Personal / Executive

The Company plans to market the ClipperSpirit to “high-net-worth” individuals for personal use. In addition to selling the aircraft, the Company, in conjunction with the Regional Service Centers, plan to market a “turn-key operation” package covering such services as hangerage, maintenance, pilot training or qualified flight crews.

6.4 Government / Special Use

The Company plans to target the Government, Military, Para-military, and Law Enforcement markets at the State & Federal levels as well as. The export market in Central & South America and other developing nations, where a cost effective multi-role aircraft is needed for maritime search & rescue, coastal patrol, homeland security, drug interdiction, and other special use missions.

6.5 Firefighting

The Company plans on marketing the aerial tanker version to the US Forest Service and state fire fighting organizations to provide replacement heavy tanker capability for the existing fleet of tankers, recently grounded by the USDA over air worthiness issues.

6.6 Competitive Aircraft

There is no active production of a multiengine flying boat for commercial purposes since the early 1960's when the Grumman Albatross ceased production.

Grumman Albatross was originally designed in 1946 for military open ocean search and rescue missions. The airframe went out of production in the late 1960's when the military decided to transition to aerial refueled helicopters for this mission. In 1980 Grumman converted 13 aircraft to an FAA certified configuration designated the G-111 for Chalk's Airlines. Seating 28 the G-111 remained a piston powered aircraft. With the exception of 1 aircraft in operation with Mirabella Aviation, Inc. and second available for purchase, the rest of the G-111 fleet is mothballed in the desert Southwest. Approximately 35 military versions are still flying in civilian ops under FAA Restricted or Experimental Airworthiness Certificates. The use of the G-111 fleet for Airline Operations is significantly hampered by the Insurance Industry's unwillingness to provide insurance coverage for piston powered commercial transport aircraft. Aluminum construction with radial piston engines.

Grumman Mallard was introduced in the years following WWII; 59 aircraft were built and approximately 25 were re-engined with Pratt & Whitney turboprops by Frakes Aviation. Three of the turbo Mallards were in service with Chalk's Ocean Airways, until their fatal crash in Miami Bay in December 2005. With the advent of the crash the FAA has effectively grounded the fleet indefinitely. Prized by private collectors, the Mallard was highly sought after and was very expensive to purchase. Recent prices for restored airframes have approached $1.75 million. With the limited production run of only 59 aircraft, availability of spare parts is a significant issue. If an airframe were available on the resale market, the cost of acquisition and conversion to turboprops would be cost prohibitive for the airline market. The Mallard is FAA certificated under the precursor regulations to FAR 25. Aluminum construction with either radial piston or turbo-prop engines. The outstanding AD from the Chalk's Airline crash has not been resolved yet significantly restricting its use.

Grumman Goose Antilles Seaplanes, LLC, of Gibson, North Carolina is attempting to remanufacture the Grumman Goose. Most people will recognize the Grumman Goose as the "Da Plane" from the 1980's television show "Fantasy Island". Their 2007 asking price for a piston powered Goose is $1.3 million. Due to the small size, aluminum construction and piston powerplants, the Company does not consider this aircraft a competitor. Antilles is also offering a turbo-prop conversion with an asking price of $2.2 million. The

Goose is FAA certificated under the precursor regulations to FAR 23. Aluminum construction with either radial piston or turbo-prop engines.

Bombardier CL-415T is a dedicated water bomber, and is the only market competition for the ClipperSpirit aerial forest fire tanker configuration. Designed strictly as a water bomber for forest fire fighting and with a price tag approaching $20 million, the CL-415T has not generated significant sales outside of the Canadian government's subsidized purchases. It is not economically viable for use by the US Forest Service contract fire fighting industry in the United States. The CL-415T is FAA certificated in the Restricted Category only. Aluminum construction with turbo-prop engines.

Cessna Caravan when outfitted with floats is an outstanding small single engine turboprop aircraft. It is ideally suited for the private owner or small "back country" charter operator. However seating capacity is limited to a maximum of 11 which is insufficient for the airlines. Nor is it well suited for ocean or salt water operations since the floats provide limited wave height capability and are manufactured from aluminum. FAA certificated under FAR 23. Not eligible for US airline operations. Aluminum construction with single turbo-prop engine.

de Havilland Twin Otter has been in service since 1964 with production ending in 1988. Seating between 13 and 18 passengers and outfitted with floats, the Twin Otter is in service with Seaborne Airlines in the Caribbean and other operations around the world. However, most of the airframes are structurally worn out from extensive flight cycles and are under-designed for the additional structural loads associated with operating on floats. Viking Aircraft of Canada has acquired the Type Certificate and is reentering the market. Wipaire fitted the aircraft with floats in the after-market. ($506,000 conversion cost). Off floats, the aircraft is very popular with the sport parachute industry. With its excellent load capacity, large rear cargo door, and turboprop engines, it can get to altitude and return quickly cycling many jumpers over the course of a day. On floats the useful load is reduced approximately 4000 lbs decreasing the maximum seating to around 13.

Dornier Seastar one airframe exists and has been certified to FAA FAR 23 standards. The 12 seat 10,000 lbs aircraft can carry 9 passengers up to 200nm at a cruise speed of 180 kts. The company is currently looking for a manufacturing facility in the US and hopes to produce 1 additional aircraft in 2010 and 5 more in 2011. Dornier estimates a market of 30 to 50 aircraft per year. Initial pricing is $5.5 million, with later models incorporating avionics upgrades selling for $6 million. Current investment stands at $150 million with an additional $150 million needed to reach production.

Beriev Be-200 is a Russian aircraft designed to meet FAA FAR 25 regulations, however it is currently certified in the Restricted category. Beriev is attempting to enter the western market with passenger, cargo, combi, and fire fighting variants. It is aluminum construction with turbofan engines. For the US market, the Russian engines will be replaced with BMW-RR 715 engines. Designed for sea state 3 and a max wave height of 3.9 feet. Water takeoff/landing distances are 3280/4265 feet respectively. Takeoff/landing speeds are quite high for comfortable water operations at 137/115 mph. In the all passenger configuration, the Be-200 will seat 64 passengers.

Beriev Be-112 is a concept design Beriev has floated and is looking for customer feedback. Without US certification there will be little interest. Even with the proposed FAA certification, Beriev has not had much success entering western markets. The Be-112 roughly mirrors the sizing and markets the ClipperSpirit is targeting. The proposed turbo-prop engines are the same ClipperSpirit is considering. It is unknown as to whether composites or conventional aluminum construction is being considered.

7 Program Timeline

The following timeline provides a basic projection of the development portion of the program:

Month 1	Program Starts “Seed Money” tasks begin
Month 3	Incorporate Customer Requirements Into Airframe Sizing Engineering & FAA Certification Work Begins
Month 6	Engine Selection & Avionics Equipment List Frozen
Month 8	Basic Airframe Configuration Frozen Detailed Systems Design Work Begins Scale Model For Marketing Cut From Engineering Design Data
Month 12	Tool Validation Testing Begins
Month 18	Airframe / Wing / Empennage Molds Cut Static Article Testing Begins
Month 24	Prototype 1 Layup Begins
Month 26	Prototype 2 Layup Begins
Month 28	Prototype A/C 1 Completed A/C 1 First Flight Company Ground / Flight Testing Begins
Month 30	Prototype A/C 2 Completed A/C 2 First Flight Company Ground / Flight testing Begins
	FAA Certification Testing Begins
Month 60	FAA Certification Awarded

8 Founder's Bios

- **Mr. Len Curreri**

Len Curreri has enjoyed over 35 years of experience in corporate aviation as a consultant for many private and commercial entities. He established the "ClipperSpirit" project after many years of seeking the ultimate challenge and experience in our industry.

Significant achievements include: Recognized proponent of safe flight operations; Held several leadership positions involving Corporate Aviation Management with respected organizations such as National Business Aviation Association (NBAA), Flight Safety Foundation (FSF), Association of Aviation Psychologists (Ohio State University), with assignments on ad hoc committees involving "Automation in the Cockpit"," Pilot Judgment"(FAA, FSI, NTSB), Operating Safety "Windows" and other subjects. Author of several papers on aviation and business related subjects. Outside counsel for the Lockheed "Skunk Works" in the development of a Small Supersonic Transport. Test and FAA Certification Pilot for Avionics EFIS System, Encoding Altimeters and other STC's on jet aircraft.

Current pilot flying with over 18,000 hours of worldwide experience in jets, turboprops and seaplanes. Hundreds of Ocean Crossings around the globe. Licenses include ATP with 7 type ratings, CFI, Airplane and Instrument, Multiengine Land and Sea. Multiengine Seaplane experience includes flying G-44, G-21(Recip and Turboprop), G-73T, HU-16, UC-1. Has in-depth experience and knowledge of operating seaplanes through present Amphibian Caravan operations. Earned FAA Airframe and Powerplant Mechanics License. Former FAA-designated Proficiency Pilot Examiner in several jet aircraft. Assisted FAA in designing Airway routing and structure.

Undergraduate academic degrees from Boston University (AS in Aeronautical Technology), BS in Aeronautics from St. Louis University. Graduate education includes MBA in Organizational Behavior from Iona College and former PhD candidate from Walden University. Thesis subjects included "Justification of Executive Aircraft as a Business Tool" and "Time Management and its Relative Impact on the Executive"

- **Mr. Charles Simpson**

Charles Simpson founded The New Nose Company, Inc. (NNC) in May 1995 to provide avionics design & systems integration, FAA DER certification services, and major aircraft modification program management services to the aerospace community. Prior to founding NNC, he worked for 12 years in the Engineering design and certification fields with the General Electric Co., Aerospace Control Systems Division and Honeywell Inc., Space and Aviation. He is a graduate of the University of Arizona with a Bachelor of Science degree in Aerospace Engineering.

Mr. Simpson has extensive experience in systems integration and the design of complex computerized avionics for both the military and commercial markets. He has been responsible for all phases of product life cycle development, from initial proposal to flight test and certification. He is authorized by the Federal Aviation Administration (FAA) as a Designated Engineering Representative (DER). In this role he has the authority to act on the behalf of the FAA in the process of certifying aircraft and systems.

While employed at General Electric and Honeywell, Mr. Simpson held a variety of senior level engineering and project leadership positions developing and integrating Fly-By-Wire Flight Controls, Full Authority Digital Engine Controllers, Autopilots, Flight Management Systems, and Electronic Display Systems. These systems are being flown today on a wide array of civilian and military aircraft produced by Boeing, McDonnell-Douglas, Northrup-Grumman, Airbus Industries, Canadair, Gulfstream, Dassault Aviation, and Raytheon. Later he was involved in the formation of a Retrofit Program Business Group responsible for developing the market of avionics upgrades in older aircraft.

Mr. Simpson is a Senior Member of the American Institute of Aeronautics and Astronautics (AIAA) and is an FAA licensed pilot and flight instructor with Glider, CFIG, SEL, MEL, & MES ratings.