



# CITY OF HOUSTON

Strategic Purchasing Division  
Administration and Regulatory Affairs  
Department

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April 1, 2008

Subject: **Letter of Clarification No. 2,  
Two Person Helicopters for the Houston Police Department**

Reference: **Invitation to Bid No.: S34-N22842**

To: All Prospective Suppliers:

This letter of Clarification is issued for the following reasons:

**To answer questions and comments, and revise the above referenced solicitation as follows:**

1. Question: Page 12 of 25 of the bid document, Subparagraph 2.1.1.2, "The engine shall be a Textron Lycoming HIO-360-D1A, 190 SHP, or City approved equal". Is another engine acceptable?

Answer: Specification as written allows for other engines to be offered if they meet the minimum specification. The determination as to what constitutes a "City-approved equal" will be made after bids are received by the City.

2. Question: Page 12 of 25 of the bid document, Subparagraph 2.1.1.3, "The engine shall have an oil cooling system with a remotely mounted, full flow, integral spin-off oil filter and dual large oil coolers installed". Is a spin-off filter mounted on the engine's accessory case acceptable?

Answer: The description provided appears to meet the "remotely mounted" specification.

3. Question: Page 12 of 25 of the bid document, Subparagraph 2.1.1.4, "The engine shall have an upstack exhaust installed". Our turbocharged engine exhaust from the side of the aircraft. Will the side exhaust satisfy the bid requirement or can the bid specification be changed to include this type of exhaust?

Answer: Change Subparagraph 2.1.1.4 to read: **The engine shall have an upstack exhaust installed. In the case of a turbocharged engine, side exhaust is permissible.**

4. Question: Page 12 of 25 of the bid document, Subparagraph 2.2.1.1, "To provide for additional crew safety and operational flexibility, the rotor diameter should be small enough to safely land in a city street".

Answer: This specification provision was addressed in Clarification Letter No. 1.

5. Question: Page 12 of 25 of the bid document, Subparagraph 2.2.2.3, "Elastomeric main rotor dampers shall be installed". Our aircraft uses conventional dual-reservoir oil/piston dampers. Will this satisfy the bid requirement or can the bid specification be changed?

Answer: Conventional dual-reservoir oil/piston dampers are not acceptable. No change to the specification will be made.

6. Question: Page 13 of 25 of the bid document, Subparagraph 2.3.2, "Elastomeric tail rotor teeter bearings shall be installed". Will needle type teeter bearings satisfy the bid requirement or can the bid specification be changed to include this type of bearing?

Answer: Needle type teeter bearings are not acceptable. No change to the specification will be made.

7. Question: Page 13 of 25 of the bid document, Subparagraph 2.3.3, "The helicopter shall have offset anti-torque pedals". Will penipital weights on the tail rotor grips to trim out the in-flight forces, which eliminates the need for offset pedal, satisfy the bid requirement, or can the bid specification be changed?

Answer: Change Subparagraph 2.3.3 to read: **The helicopter shall have offset anti-torque pedals or equivalent method for offsetting in-flight forces on the anti-torque system.**

8. Question: Page 13 of 25 of the bid document, Subparagraph 2.4.2, "Fuel system shall be rupture and puncture resistant to a fifty foot drop, eighty percent full, without leakage".

Answer: This specification provision was addressed in Clarification Letter No. 1.

9. Question: Page 13 of 25 of the bid document, Subparagraph 2.5.1.3, "Twenty-eight volt, DC, 130-amp alternator, minimum shall be installed". Can the bid specification be changed to accept a 70 amp alternator, or an alternator with sufficient capacity to power all onboard systems and required police equipment?

Answer: A 70 amp alternator is not acceptable. No change to the specification will be made.

10. Question: Page 13 of 25 of the bid document, Subparagraph 2.7.3, "Compass - wet, overhead". Will a vertical card compass mounted to the front windshield bubble satisfy this requirement, or can the bid specification be changed to accept a vertical card compass as well.

Answer: A vertical card compass is not acceptable. No change to the specification will be made.

11. Question: Page 14 of 25 of the bid document, Subparagraph 2.10.1.3, "Maximum Endurance of at least 3.8 hours". Our aircraft has a maximum endurance of 3.5 hours without aux fuel. With aux fuel system the endurance is over 4 hours. Will this satisfy the bid requirement or can the bid specification be changed to accept 3.5 hours of endurance?

Answer: Change Subparagraph 2.10.1.3 to read: **Maximum endurance of at least 3.5 hours.**

12. Question: Page 14 of 25 of the bid document, Subparagraph 2.11, "Weights: Maximum gross weight, empty weight, and useful load - normal category". Our aircraft has a maximum gross weight of 2600 lbs., empty weight of 1640 lbs., and useful load of 960 lbs.

Answer: This specification provision was addressed in Clarification Letter No. 1.

13. Question: Page 14 of 25 of the bid document, Subparagraph 4.2, "Collective friction control and two-axis cyclic friction control shall be installed". This requirement is not necessary on our aircraft, and therefore, not available. Will this satisfy the bid requirement or can the bid specification be changed?

Answer: Change Subparagraph 4.2 to read: **Collective friction control and two-axis cyclic friction control, or equivalent method of frictioning cyclic when not in flight, shall be installed.**

14. Question: Page 14 of 25 of the bid document, Subparagraph 4.7, "Cabin doors shall be single-latch with clear windows and circular air scoops". Our aircraft doors are secured with a triple latching system that is operated with a single door handle, windows tinted same as canopy, and each window has large, closable rectangular vents and diverters for maximum airflow and positive sealing. Will this satisfy the bid requirement or can the bid specification be changed?

Answer: Change Subparagraph 4.7 to read: **Cabin doors shall have a latching system operated via a single latch with windows and closable air vents.**

15. Question: Page 14 of 25 of the bid document, Subparagraph 4.10, "Pilot and copilot seats shall be cloth mesh on alloy aluminum tubing or best available at time of delivery. Regardless of seats installed, aircraft shall have hard points for installation of alloy aluminum tubing seat frames". Our aircraft seating consists of NASA designed energy absorbing foam cushions on top of a heavy duty riveted aluminum box frame that makes part of the structure of the aircraft. This seating is specially engineered to provide high amount of comfort. Alloy seat frames are unnecessary. Will this satisfy the bid requirement or can the bid specification be changed?

Answer: The specification as written allows for other types of seating. No change to the specification will be made.

16. Question: Page 14 of 25 of the bid document, Subparagraph 4.12, "The cabin shall have an adjustable ventilation system for flight crew comfort. Specifically, the aircraft must have a fresh air induction system, a Paravion heater, and windscreen defroster". Our aircraft comes standard with a very effective exhaust muff style heater driven by the engine cooling fan. Will our standard heater satisfy the bid requirement, or can the bid specification be changed?

Answer: Change Subparagraph 4.12 to read: **The cabin shall have an adjustable ventilation system for flight crew comfort. Specifically, the aircraft must have a fresh air induction system, a Paravion or City-approved equivalent heater, and windscreen defroster.**

17. Question: Page 15 of 25 of the bid document, Subparagraph 5.1.10, "Cyclic mounted radio frequency scrolling switch". With the Garmin radios specified in the bid, it is not possible to "scroll" through the frequencies. Our aircraft has provision for this feature on the cyclic grip. Will this satisfy the bid requirement, or can the bid specification be changed?

Answer: Change Subparagraph 5.1.10 to read: **Cyclic mounted switch to flip-flop between active and stand-by frequencies.**

18. Question: Page 15 of 25 of the bid document, Subparagraph 6.1.6, "Glove Box". Our aircraft does not have a glove box. It has a large baggage compartment that is located behind the cabin in which over 100 lbs. of equipment can be stowed. Will this satisfy the bid requirement, or can the bid specification be changed?

Answer: We require a glove box or some other sort of storage area in the cabin/cockpit. A baggage compartment that is not easily accessible from the cabin/cockpit is not acceptable. No change to the specification will be made.

19. Question: Page 15 of 25 of the bid document, Subparagraph 6.1.13, "Grease fitting on short shaft" Our aircraft is not equipped with a "short shaft". Can this bid specification be deleted or changed as to be required only for aircraft with a "short shaft"?

Answer: Change Subparagraph 6.1.13 to read: **Grease fitting on short shaft, as applicable.**

20. Question: Page 15 of 25 of the bid document, Subparagraph 6.1.14, "STAR System (start-up overspeed limiter, automatic rotor engagement, low rotor RPM warning device)". Our aircraft uses a throttle correlator to control engine RPM. The rotor is engaged via a simple and reliable pilot operated clutch. It comes equipped with a low RPM warning device as standard. Will this satisfy the bid requirement, or can the bid spec be changed such as to require it only for aircraft for which a "STAR System" is available or necessary?

Answer: A pilot operated clutch is not acceptable. No change to the specification will be made.

When issued, Letter(s) of Clarification shall automatically become a part of the bid documents and shall supersede any previous specification(s) and/or provision(s) in conflict with the Letter(s) of Clarification. It is the responsibility of the bidder to ensure that it has obtained all such letter(s). By submitting a bid on this project, bidder shall be deemed to have received all Letter(s) of Clarification and to have incorporated them into this bid.

If you should have any questions, or if further clarification is needed regarding this Invitation for Bid, please contact me.

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Attachment: Pages 12 of 25 through 15 of 25 of the bid document, marked Revised March 31, 2008

## SECTION B

### SPECIFICATIONS

#### PART II TECHNICAL SPECIFICATIONS

BID INVITATION NO. S34-N22842

#### ITEM NO. 1, TWO PERSON HELICOPTER FOR POLICE DEPARTMENT

##### 1.0 GENERAL:

- 1.1 The detailed specifications provided herein are intended to describe the type, size, and quality of helicopters required. The City of Houston reserves the right to consider the overall performance and operational capability of the helicopter in determination of acceptability, regardless of initial cost.
- 1.2 The model of helicopter described in these specifications is a Schweizer 300C, or City approved equal. These specifications shall establish the requirements for the acquisition of piston-powered, two-place helicopters for the City of Houston Police Department.
- 1.3 The helicopters must have been normal FAA certified by the Federal Aviation Administration (FAA) for a period of one (1) year or more prior to bid due date in order to assist the Houston Police Department in its determination of suitability. The helicopters must be capable of operating single-pilot day or night, under Visual Flight Rules (VFR), with both the pilot and copilot having easy access to all controls and instruments. The aircraft shall be capable of carrying at a minimum, the required flight crew, full of fuel and mission equipment. It is mandatory that the helicopter have sufficient engine horsepower and lift capability to operate in a manner satisfactory to the operating requirements of the City of Houston's Police Department, within the geographical encounters of the City of Houston, Texas.
- 1.4 All equipment necessary to satisfy this document must be "Factory New" and installed in accordance with applicable Federal Aviation Regulations (FAR's).

##### 2.0 TECHNICAL REQUIREMENTS:

###### 2.1 Engine:

- 2.1.1 The helicopter shall be equipped with a single, piston engine.
  - 2.1.1.1 The horsepower shall be sufficient to take off and maintain a constant flight altitude at aircraft full gross weight at ISA + 20° C.
  - 2.1.1.2 The engine shall be a Textron Lycoming HIO-360-D1A, 190 SHP, or City approved equal.
  - 2.1.1.2 The engine shall have a manufacturer's recommended overhaul of not less than 1500 hours.
  - 2.1.1.3 The engine shall have an oil cooling system with a remotely mounted, full flow, integral spin-off oil filter and dual large oil coolers installed.
  - 2.1.1.4 **The engine shall have an upstack exhaust installed. In the case of a turbocharged engine, side exhaust is permissible.**
  - 2.1.1.5 The engine shall have a light-weight, high torque starter installed.

###### 2.2 Main Rotor System:

- 2.2.1 The main rotor system shall be of an engine driven design consisting of a single main rotor.
  - 2.2.1.1 To provide for additional crew safety and operational flexibility, the main rotor diameter shall not exceed 27 feet.
  - 2.2.1.2 Main rotor system design shall minimize tracking procedures.
- 2.2.2 The rotor system will be fully articulated, or semi-rigid, with two or more blades
  - 2.2.2.1 Blades shall be of all metal or composite construction.
  - 2.2.2.2 Blades shall require no internal or dye penetrant inspection during service period.
  - 2.2.2.3 Elastomeric main rotor dampers shall be installed.

**SECTION B: PART II: TECHNICAL SPECIFICATIONS (CONTINUED):**

**ITEM NO. 1, TWO PERSON HELICOPTER FOR POLICE DEPARTMENT (Continued):**

**2.0 TECHNICAL REQUIREMENTS (Continued):**

2.3 Anti-Torque System:

2.3.1 The helicopter's anti-torque system shall consist of a single tail rotor design and will not be of a coaxial main rotor or tandem main rotor design.

2.3.2 Elastomeric tail rotor teeter bearings shall be installed.

**2.3.3 The helicopter shall have offset anti-torque pedals or equivalent method for offsetting in flight forces on the anti-torque system.**

2.4 Fuel System:

2.4.1 Internal fuel capacity should support continuous flight at economical cruise for a minimum of 2.2 hours, plus a 20 minute reserve as required by FAR 91.151 (b), without refueling or use of an auxiliary tank. If multiple fuel cells are employed, the cells shall be interconnected to allow servicing from single filler and fuel management shall be automatic.

2.4.2 Fuel system shall be rupture and puncture resistant.

2.4.3 Fuel capacity shall be at least 30 US gallons without an auxiliary tank.

2.5 Electrical Systems:

2.5.1 The aircraft's electrical system shall be of an aircraft type, 28 volt, DC system with sufficient amperage to operate all on-board systems simultaneously. Sudden electrical overload protection shall be of the circuit breaker type only. The electrical system shall utilize a modular electrical harness.

2.5.1.1 A heavy duty, lead acid aircraft battery of sufficient capacity to accomplish engine starts throughout a wide range of ambient outside air temperatures without the use of external power shall be installed.

2.5.1.2 A standard aircraft type external power receptacle shall be installed.

2.5.1.3 Twenty-eight volt, DC, 130-amp alternator, minimum shall be installed.

2.6 Night Flight Equipment:

2.6.1 Position lights (LED if available)

2.6.2 Anti-collision strobes (2) (LED if available)

2.6.3 Instrument lights on all instruments with adjustable light intensity control (dimmer assembly)

2.6.4 Two-position landing light operated from pilot's flight control(s)

2.6.5 Cockpit utility light suitably located for use by the flight crew

2.7 Flight Instruments:

2.7.1 Airspeed indicator

2.7.2 Barometric altimeter

2.7.3 Compass – wet, overhead

2.7.4 Outside air temperature indicator

2.7.5 Quartz clock (LC-2)

2.7.6 Turn & slip indicator

2.7.7 Vertical speed indicator

2.7.8 Dual tachometer, engine and main rotor RPM

2.7.9 Attitude Gyro

2.7.10 Directional Gyro

2.8 Engine Instruments:

2.8.1 Manifold pressure gauge

2.8.2 Engine oil pressure indicator

2.8.3 Engine oil temperature indicator

2.8.4 Cylinder head temperature indicator

2.8.5 Fuel Pressure indicator

2.8.6 Fuel quantity indicator

2.8.7 DC ammeter

2.8.8 Two running time meters, one recording flight time and the other recording maintenance time.

**SECTION B: PART II: TECHNICAL SPECIFICATIONS (CONTINUED):**

**ITEM NO. 1, TWO PERSON HELICOPTER FOR POLICE DEPARTMENT (Continued):**

**2.0 TECHNICAL REQUIREMENTS (Continued):**

2.9 Instrument Panel Warning Lights:

- 2.9.1 Low fuel warning light
- 2.9.2 Main rotor transmission oil temp / pressure warning light
- 2.9.3 Main rotor transmission chip detector light
- 2.9.4 Tail rotor transmission chip detector warning light
- 2.9.5 Low voltage warning light

2.10 Performance:

- 2.10.1 All Performance specifications are at sea level, standard day (ISA), 1700-pound gross weight unless otherwise noted.
  - 2.10.1.1 Maximum Cruise Speed of at least 86 kts (approx. 98 mph)
  - 2.10.1.2 Maximum Permitted Speed (VNE) of at least 95 kts (approx. 109 mph)
  - 2.10.1.3 Maximum Endurance of at least 3.5 hours**
  - 2.10.1.4 Best Rate of Climb of at least 1,305 feet / minute
  - 2.10.1.5 Service Ceiling of at least 12,000 feet
  - 2.10.1.6 Hover Ceiling In-ground effect of at least 10,800 feet  
(ISA + 20 C) of at least 9,000 feet
  - 2.10.1.7 Hover Ceiling Out-of-ground effect of at least 8,600 feet

2.11 Weights:

- 2.11.1 Maximum gross weight of at least 2,050 lbs
- 2.11.3 Empty weight of at least 1,100 lbs
- 2.11.4 Useful load – Normal Category of at least 950 lbs

**3.0 SEATING CAPACITY:**

- 3.1 Two (2) or more places, inclusive of minimum required flight crew. Seating arrangement **MUST** be as follows:
  - 3.1.1 At least two (2) persons abreast in the cockpit area, one of which being the pilot-in-command.

**4.0 COCKPIT / CABIN:**

- 4.1 Dual flight controls, left hand pilot-in-command, shall be installed. (The cyclic and collective controls in the copilot position should be quickly removable).
- 4.2 Collective friction control and two-axis cyclic friction control, or equivalent method of frictioning cyclic when not in flight, shall be installed.**
- 4.2 Two-axis, electric cyclic trim shall be installed.
- 4.3 A selector switch for electric cyclic trim control by the pilot-in-command or copilot shall be installed.
- 4.4 A fuel flow shut off valve shall be installed.
- 4.5 The aircraft shall have tinted plexi-glass canopy windows.
- 4.6 Cabin doors shall be single-latch with clear windows and circular air scoop vents.
- 4.7 Cabin doors shall have a latching system operated via a single latch with windows and closeable air vents.**
- 4.8 Cabin doors shall be equipped with pneumatic door openers.
- 4.9 The aircraft must be FAA certified for flight with doors removed. Door removal should be accomplished through a quick-disconnect door hinge system.
- 4.10 Pilot and copilot seats shall be cloth mesh on alloy aluminum tubing or best available at time of delivery. regardless of seats installed, aircraft shall have hard points for installation of alloy aluminum tubing seat frames.
- 4.11 FAA-approved shoulder harnesses with inertia type reel locks and lap belts, with metal to metal releases, shall be installed on all seats.
- 4.12 The cabin shall have an adjustable ventilation system for flight crew comfort. Specifically, the aircraft must have a fresh air induction system, a Paravion or City approved equivalent heater, and windscreen defroster.**
- 4.13 An accessory plug shall be installed.
- 4.14 The cabin floor covering shall be gray rubber mat.

## **SECTION B: PART II: TECHNICAL SPECIFICATIONS (CONTINUED):**

### **ITEM NO. 1, TWO PERSON HELICOPTER FOR POLICE DEPARTMENT (Continued):**

#### **5.0 AVIATION AND POLICE COMMUNICATIONS EQUIPMENT:**

- 5.1 The following specifications are a representative sample of the type of avionics and police equipment required for the police mission. Specific model numbers are used as a reference to indicate the equivalent type and functionality of equipment desired. The City will be the final authority on the acceptability of equipment. The aircraft manufacturer will provide and install the following:
- 5.1.1 Comm #1: Garmin GNS 430 w/ GI 106A Indicator Nav/Comm/GS/GPS, or Garmin brand equivalent
  - 5.1.2 Comm #2: Garmin SL-30 Nav/Com Comm Transceiver, or Garmin brand equivalent
  - 5.1.3 Transponder: Garmin GTX 330 (Mode S), or Garmin brand equivalent
  - 5.1.4 Blind Encoder: ACK A-30
  - 5.1.5 Audio Selector Panel: Northern Airborne Technology (NAT) AMS 44 Dual Audio Panel
  - 5.1.6 Intercom foot switch
  - 5.1.7 Master avionics switch
  - 5.1.8 Avionics cooling fan
  - 5.1.9 Switchable hot mike intercom system
  - 5.1.10 Cyclic mounted switch to flip-flop between active and stand-by frequencies.**
  - 5.1.11 Police Radio: Technisonic TDFM 7000 multiband P25 airborne transceiver 7000.

#### **6.0 ADDITIONAL EQUIPMENT REQUIRED:**

- 6.1 The manufacturer will provide and install the following miscellaneous equipment:
- 6.1.1 Standard, tubular skid-type landing gear equipped with extra heavy-duty skid shoes such as Carbide Technology skid shoes.
  - 6.1.2 Booted oleo landing gear dampers
  - 6.1.3 Large instrument panel
  - 6.1.4 First aid kit
  - 6.1.5 Map case
  - 6.1.6 Glove box
  - 6.1.7 Halon fire extinguisher
  - 6.1.8 Oil filler/dipstick
  - 6.1.9 Ground handling wheels (flyable)
  - 6.1.10 Ground handling wheel brackets
  - 6.1.11 Fuselage jack/lift fittings
  - 6.1.12 Tie down kit
  - 6.1.13 Grease fitting on short shaft, as applicable.**
  - 6.1.14 STAR System (start-up overspeed limiter, automatic rotor engagement, low rotor RPM warning device)

#### **7.0 AIRCRAFT EXTERIOR:**

- 7.1 A two-color paint scheme as specified by the City of Houston will be required. The paint brand, type, and colors must be the following (or their exact equivalent): Du Pont Imron, Polyurethane Enamel, in the following colors: Blue 6544U and White 555X.
- 7.2 Special decals, such as police emblems, etc., will be furnished by the City of Houston.

#### **8.0 TRAINING:**

- 8.1 The contractor shall be required to provide Factory Approved Transitional Flight Training for two commercial helicopter pilots and Factory Maintenance Training for two aircraft maintenance technicians for each helicopter delivered/ordered. The transitional flight training shall be conducted, at the City's option, at the original equipment manufacturer's (OEM) facility, a factory-approved flight school, or by a factory-approved trainer at the Helicopter Patrol's hangar facility. The maintenance training shall be provided at the OEM facility. The contractor shall be responsible for all costs associated with providing this training. The City shall be responsible for all transportation to and from the training facility and lodging, per diem and miscellaneous expenses associated therewith for City employees.

**SECTION B: PART II: TECHNICAL SPECIFICATIONS (CONTINUED):**

**ITEM NO. 1, TWO PERSON HELICOPTER FOR POLICE DEPARTMENT (Continued):**

**9.0 WARRANTY:**

9.1 A minimum of one-year **warranty** or 1,000 flight hours on both workmanship and materials must be provided. The warranty period commences on the date the city accepts the equipment. Warranty work must be completed without cost to the city within ten days after notification to vendor of equipment failure or faulty material. When extended warranties are available, they must be included as a part of the bid for the benefit of the City. Any and all documents necessary to effect warranty must be properly applied for and submitted by the successful vendor. All freight charges to and from the vendor's repair facility for warranty repair and/or maintenance must be borne by seller during the warranty period.

**10.0 PERFORMANCE DEMONSTRATION:**

10.1 The City of Houston, at its discretion, may require demonstration of a similar type of proposed equipment as part of the bid evaluation process. The equipment, with operator, shall be provided by the bidder at no cost to the City in Houston, Texas, for a period of time deemed sufficient to properly evaluate the equipment. The exact period of time and the conditions and terms of the demonstration shall be established when it is determined that a demonstration is required. The bidder shall provide the equipment within twenty-one (21) calendar days after receipt of a written request from the City.

**11.0 LITERATURE:**

11.1 The literature shall include two sets of operation, maintenance, and parts manuals in paper form. The specified literature will be provided with the delivery of the first and the last helicopter.

**12.0 DELIVERY:**

12.1 Item(s) as specified above with delivery ticket and other required documents shall be delivered Prepaid, F.O.B. destination to the address shown on the City of Houston Purchase Order. It is required that delivery be completed as expeditiously as possible, but no later than **360 calendar days** after the contractors receipt of City of Houston Purchase Order. Point of delivery will be Houston Police Department, Helicopter Patrol, 8402 Larson, William P. Hobby Airport, Houston, Texas.