

Mayne Island Fire Rescue

Fire Department Apparatus Replacement Report

Rapid Attack



Report Purpose

This report has been created at the request of the Trustees; to assess alternatives to purchasing a new Rescue / Light Attack Apparatus to replace Rapid Attack and recommending a solution.

It is recommended the Board approve the Fire Department's request to purchase one HUB Firefighter 200 Rescue / Light Attack Apparatus assembled on a new 2013 Ford F-550 4X4 cab and chassis with a 6.7 L intercooled turbo diesel engine and 6 speed Automatic transmission. The Apparatus shall feature a HUB Firefighter 200 Compressed Air Foam System; with a FoamPro injection system and 250 imperial gallon booster tank. The Apparatus shall be constructed of formed extruded aluminum. The apparatus shall be ULC-S515-04 tested onsite by ULC and labeled as an Initial Attack Fire Fighting Apparatus.

Delivery shall be in 2013, approximately 300 days after the pre-construction meeting, providing there are no delays with the chassis delivery. Specifications and details will be delivered in writing to HUB by the Fire Chief and a final price will be obtained prior to placement of the order. The vehicle purchase of an estimated \$217,000 will be funded from the Vehicle Reserve fund having a balance of approximately \$232,913 available at the time of delivery in 2013.

Mayne Island Fire Rescue

Fire Department Apparatus Replacement Report

Rapid Attack



Apparatus Response and Assigned Duties

Emergency Medical Aid calls account more than three quarters of all emergency call responses; whereas fires of all types account for less than 10 percent of emergency responses by Mayne Island Fire Department.

To maintain the accepted Levels of Service¹ and effective response times, apparatus reviews must be done occasionally to identify and correct deficiencies that exist with our fire department apparatus. Recommendations will be made in some cases to upgrade or replace an apparatus.

This report addresses only those services which are the responsibilities of Rapid Attack. To support the published levels of service the vehicle must be capable of carrying the personnel, tools and equipment required by the responding firefighters to perform their job effectively, efficiently and safely.

The Rescue / Light Attack Apparatus should be equipped with EMA-FR supplies, rescue and extrication tools, firefighting equipment and more, enabling firefighters to respond to various types of emergency calls including:

- Emergency Medical Aid (EMA-FR),
- MVI and Auto-Extrication (Jaws) including vehicle fire and fire standby,
- Rescue including Rope Rescue (THARR), general incidents, animal rescue,
- Initial Attack Response, including structures, vehicles, outdoor and forest fires.

The tools & equipment list includes, but is not limited to:

- EMA-FR calls: First Responder Medical Bag, Oxygen cylinder, AED, Blankets, Immobilization device, biohazard protection, including Rehydration, nutrition, and warming and cooling equipment for firefighter rehabilitation during incidents;
- MVI calls: Extrication tools, Hand tools, Stabilization Equipment, Tarps, Blocking & Wedges, Firefighting Equipment, Portable scene lighting, Clean-up tools, Utility Ropes, Liquid spill Hazmat kit;
- Rescue calls: Life Safety Ropes, Rescue Harness, Rappelling equipment, Stokes Basket;
- Initial Attack Firefighting Equipment : Hoses, Ladders, Axes, Irons, minimum 4 Self Contained Breathing Apparatus (SCBA) & 4 spare SCBA bottles, Rescue Saw, Chain Saw, water, chemical & CO² Fire Extinguishers;
- Hazmat Initial Response: Technical Operations are provided by CRD Hazmat Team.

¹ December 9th 2011, Meeting of the Board of Trustees under the topic of Fire Department:

"The Level of Service Document has been received from the Fire Chief. Trustee McKinnon recommended that it be posted on the web site and placed into the policy manual. The list was prepared at the request of the Board. Trustee McKinnon asked: are there any questions from the Board? Can it be expanded or clarified? The purpose of the document is to clarify the responsibilities of the Fire Department. This is the 1st of the 3 steps we have established to determine level of Training and job Descriptions. Various Items were briefly discussed. It was moved by Trustee McKinnon and seconded by Trustee Akey to receive the Level of Service document and was carried unanimously."

Mayne Island Fire Rescue

Fire Department Apparatus Replacement Report

Rapid Attack



Apparatus Response and Assigned Duties (cont.)

The following table lists each of the major categories of emergency responses in the Levels of Service document Rapid Attack is expected to perform. The replacement apparatus must be capable of fulfilling all the categories below.

| Rapid Attack | |
|--------------------------------------------------------------------|-----|
| Conforms to NFPA: | No |
| CAN-ULC-S515-04 certified Apparatus: | No |
| Emergency Medical Aid – First Response (EMA-FR)² | |
| • EMA-FR - Emergency Medical Aid | Yes |
| • EMA-FR - Incident Standby | Yes |
| • EMA-FR - Community event Standby | Yes |
| • EMA-FR - Motor Vehicle Incident | Yes |
| Rescue: | |
| • Technical High Angle Rope Rescue | No |
| • Rescue -Search & Rescue | No |
| • Rescue - Animal rescue incidents | No |
| • Motor Vehicle Incident - Extrication | Yes |
| Light Attack: Fire Suppression⁴ | |
| • MVI - Fire protection standby | No |
| • MVI- Fire Suppression | No |
| • Initial Attack - Structural | No |
| • Initial Attack - Outdoor Fires - brush; wildland | Yes |
| • Initial Attack - Outdoor Fires - dumpster; garbage | No |
| • Fire Watch/Detail assignment | Yes |
| • Hazmat Initial Response | No |

| HUB Fire Fighter 200 | |
|--------------------------------------------------------------------|-----|
| Conforms to NFPA: | Yes |
| CAN-ULC-S515-04 certified Apparatus: | Yes |
| Emergency Medical Aid – First Response (EMA-FR)³ | |
| ✓ EMA-FR - Emergency Medical Aid | Yes |
| ✓ EMA-FR - Incident Standby | Yes |
| ✓ EMA-FR - Community event Standby | Yes |
| ✓ EMA-FR - Motor Vehicle Incident | Yes |
| Rescue: | |
| ✓ Technical High Angle Rope Rescue | Yes |
| ✓ Rescue -Search & Rescue | Yes |
| ✓ Rescue - Animal rescue incidents | Yes |
| ✓ Motor Vehicle Incident - Extrication | Yes |
| Light Attack: Fire Suppression⁵ | |
| ✓ MVI - Fire protection standby | Yes |
| ✓ MVI- Fire Suppression | Yes |
| ✓ Initial Attack - Structural | Yes |
| ✓ Initial Attack - Outdoor Fires - brush; wildland | Yes |
| ✓ Initial Attack - Outdoor Fires - dumpster; garbage | Yes |
| ✓ Fire Watch/Detail assignment | Yes |
| ✓ Hazmat Initial Response | Yes |

Highlighted lines indicate the response categories Rapid Attack is unable to fulfill due to configuration and design limitations.

The HUB Fire Fighter 200 Rescue / Light Attack Apparatus will enable the Fire Department to fulfill the Levels of Service today while providing the ability to meet the future demands of the Fire Department.

² Rapid Attack does not have sufficient space to carry the required THARR, Hazmat, Equipment and tools. Other Apparatus, however complimentary - have also reached their maximum capabilities and are not able to take on any additional duties.

³ The HUB Fire Fighter 200 has ample space to store the tools and equipment for EMA-FR response.

⁴ Rapid Attack does not meet certification for Initial Attack Apparatus for fire response to any insured property values or protection of lives.

⁵ The HUB Fire Fighter 200 meets certification for Initial Attack Apparatus for fire response to any insured property values or protection of lives.

Mayne Island Fire Rescue

Fire Department Apparatus Replacement Report

Rapid Attack



Alternatives

Alteration of the existing Rapid Attack vehicle:

A basic review of Rapid Attack truck body was made with the intent of determining the possibility of increasing the capabilities of Rapid Attack to meet industry standards. It is estimated upgrades to Rapid Attack could cost as much as \$125,000 to \$150,000.

The truck body of Rapid Attack is comprised of six storage compartments. A pump unit and 200 gallon water tank are located in the centre void of the truck body. With a total of only 61.5 cubic feet of compartment storage space, it is unable carry all of the required fire fighting tools and life saving rescue equipment needed to perform all of the expected emergency response.

Additional compartments on top of the existing body are possible but this could create problems with the vehicles centre of gravity which "shall be no higher than 80% of the rear axle track width"⁶ when loaded with equipment and occupants. This would also not address other problems with the Rapid Attack design which can cause delays when loading and off loading the tools and equipment.

\$???. Not able to obtain a quotation or cost estimate to upgrade body.

The pump unit on Rapid Attack does not meet minimum requirements to be certified to CAN-ULC-S515-04 for Initial Attack Fire Fighting Apparatus functions and is not suitable as the first responding apparatus for any type of fire response for insured values⁷. An initial response to a fire using Rapid Attack as the first responding apparatus could place the Department and District in a position of liability for losses incurred by property owners.

\$40,000 - \$60,000 estimated cost to replace CAFS pump unit, plus the cost of ULC certification.

The chassis of Rapid Attack is 18 years old, underpowered and has poor performance, braking and handling. If the existing body mounts will match up, the chassis could be replaced with a 2013 Crew Cab 4X4 chassis properly equipped with a payload of 12,000 lbs or more.

\$65,000 estimated cost for new cab and chassis for a 2013 Ford F-550 properly equipped⁸.

Acquisition of a suitable replacement in the used fire apparatus market:

An internet search was done and the results listed a variety of configurations, capabilities, asking price, and age - while prices were reasonable, none of the results returned a suitable combination of features all in one vehicle.

None of the search results met the needs of a replacement vehicle for various reasons, including: Seating capacity insufficient; Older than 10 years; insufficient equipment storage capacity; Non-Conforming to NFPA, CAN-ULC-S515-04; Location. i.e. Eastern Canada, United States, UK, etc.

⁶ Reference: NFPA Automotive Fire Apparatus Standard.

⁷ CAN-ULC-S515-04 certification as "Initial Attack Apparatus" does not appear to be required for wildland fire response at this time.

⁸ Estimate generated using online build & price tool available at ford.com

Mayne Island Fire Rescue

Fire Department Apparatus Replacement Report

Rapid Attack



Conclusion:

It is clear from reviewing modern society expectations and the Levels of Service provided by Mayne Island Fire Rescue, undertaking an upgrade our existing Rapid Attack to meet the today's response needs and the future growth of the fire department would be neither strategically responsible nor economically feasible. The cost of these modifications is too variable to estimate and costs could exceed an acceptable level partway through the project.

- In order to modify the apparatus, it must be removed from active service for a period of time. The Fire Department does not have an equivalent apparatus to fill the role of Rapid Attack and a reduction in levels of service would not be acceptable to the Fire Department nor to the Residents. This would require purchasing or leasing a temporary replacement vehicle for Rapid Attack.
- The only re-useable components of Rapid Attack would be the water tank and original truck body and some attached accessories.

Rescue / Light Attack and Mini-Pumper Apparatus are available in various configurations and price ranges. The HUB Fire Fighter 200 is in the mid-range for price and capabilities making it the best choice for Mayne Island Fire Rescue to serve the community's needs - operationally and financially.

The Fire Apparatus Manufacturer recommended to supply the replacement to Rapid Attack is HUB Fire Engines & Equipment Ltd. of Abbotsford, B.C. The specific apparatus is the HUB Fire Fighter 200.⁹

Built on a 2013 Ford F-550 Chassis, with ample storage space for tools & equipment, fully certified to CAN-ULC-S515-04 Initial Attack Apparatus for Light Attack, the Hub Firefighter 200 is the Rescue / Light Attack Apparatus that will serve the needs of the Levels of Service provided by Mayne Island Fire Rescue today and near future; at a reasonable cost for the value of this apparatus to the community.

Advantages of the HUB Fire Fighter 200 are that it is a highly effective fire fighting system. Compressed Air Foam has the fastest knockdown time and this vehicle's compact design gives it the manoeuvrability to reach enclosed areas and gets into places others can't¹⁰.

The system uses a minimal amount of water, making it ideal for areas with limited water supply. Water damage is considerably lower and smoke is reduced, protecting fire fighters, structural contents, and the environment. The HUB Firefighter 200 is listed by Underwriters' Laboratories of Canada.

⁹ Hub Firefighter 200 brochures attached.

¹⁰ Although a tight fit, The HUB Fire Fighter 200 will be able to park inside the Fire Hall in Rapid Attack's truck bay.



FIRE FIGHTER

Compressed Air Foam System

- Excellent first response and light attack vehicle
- Compact design gets into places others can't
- Effective for Class "A" and Class "B" fires
- Low cost method of knockdown
- Built to Canadian Standards in North America



COMPRESSED AIR FOAM SYSTEMS FEATURES


- Faster knockdown than water alone
- Faster knockdown than Class "A" aspirated foam
- Lower nozzle pressure for one person handling
- Lighter hose
- Adheres to vertical and overhead surfaces
- Casts up to 24 metres/80 feet

BENEFITS

- Increased safety and reduced fatigue for fire fighters
- Faster response time and suppression
- Reduced smoke
- Reduced environmental contamination
- Reduced fire and collateral damage
- Reduced return to ready time



HUB FIRE FIGHTER FEATURES

- Rotary screw compressor for efficient continuous use
- Belt driven compressor means no clutch
- Air cooled, 60 horsepower Deutz diesel engine
- Choice of FoamPro or Dosatron foam injection systems
- Powder coated frame and control panel
- Canadian made CoPoly water tank with lifetime warranty
- Produces Compressed Air and Naturally Aspirated foams simultaneously
- Runs Class "A" and Class "B" simultaneously with the Dosatron injectors
- Easy to use
- Listed by Underwriters' Laboratories of Canada 



HUB FIRE ENGINES

- Leading supplier of CAFS in North America
- Expert manufacturer and provider of reliable fire suppression apparatus since 1959
- On staff trainers for maintenance and operation training
- Customer service by factory trained technicians
- Ongoing support and maintenance



The HUB Fire Fighter is exclusive to HUB Fire Engines & Equipment Ltd.,
3175 McCallum Road, P.O. Box 10, Abbotsford, BC, V2T 6Z4 www.HUBfire.com

For more information about the HUB Fire Fighter
call 604-859-3124 or TF 1-888-611-2896



| | | FIRE FIGHTER 100 | FIRE FIGHTER 200 |
|-----------------------|---------------|-------------------------------|-------------------------------|
| FOAM OUTLETS* | | Two (2) 1.5 inch | Two (2) 1.5 inch |
| WATER OUTLETS | | One (1) 1.5 inch | One (1) 2.5 inch |
| TANK FILL | Hydrant | 1.5 inch | 1.5 inch |
| | Direct | 1.0 inch | 1.5 inch |
| SUCTION | | One (1) 2.5 inch | One (1) 2.5 inch |
| FOAM INJECTORS | FoamPro | Class A | Class A |
| | Rate | 0.1% - 1.0% | 0.1% - 1.0% |
| | GPM | Two (2) @ 100 GPM max | Two (2) @ 100 GPM max |
| | Dosatron | Class A, AB, B, ABD | Class A, AB, B, ABD |
| | Rate | 0.2% - 2.0% | 0.2% - 2.0% |
| COMPRESSOR | GPM | Two (2) @ 45 GPM max | Two (2) @ 45 GPM max |
| | Type | Rotary Screw | Rotary Screw |
| | Make | Ingersoll Rand CE55 | Ingersoll Rand CE55 |
| | Drive | Poly Chain Belt | Poly Chain Belt |
| | | Direct Drive (no clutch) | Direct Drive (no clutch) |
| ENGINE | | Auxiliary outlet w/ regulator | Auxiliary outlet w/ regulator |
| | Make | Deutz | Deutz |
| | Horsepower | 44 | 60 |
| | Cylinders | 3 | 3 |
| | Fuel | Diesel | Diesel |
| WATER PUMP | Aspiration | Natural | Turbocharged |
| | Model | Hypro 9203 | Waterous CP2 |
| | GPM | 100 GPM @ 100 PSI | 250 GPM @ 150 PSI |
| | Certification | | CAN/ULC-S515-04 Light attack |
| CONTROLS | Dosatron | 3 step | 3 step |
| | FoamPro | 4 step | 4 step |
| FRAME | Finish | Powder Coated | Powder Coated |
| | Height | 42.0 inch | 42.0 inch |
| | Width | 48.0 inch | 48.0 inch |
| | Depth | 46.0 inch | 46.0 inch |
| ELECTRICAL | | Conforms to NFPA | Conforms to NFPA |
| PUMP PANEL | | Powder Coated | Powder Coated |
| | | Tuxedo Black | Tuxedo Black |
| WEIGHT | | 1,480 pounds | 1,680 pounds |

SPECIFICATIONS

The HUB Fire Fighter is a highly effective fire fighting system. Compressed Air Foam has the fastest knockdown time and this vehicle's compact design gives it the maneuverability to reach enclosed areas, city lanes, and parkades.

The system uses a minimal amount of water, making it ideal for areas with limited water supply. Water damage is considerably lower and smoke is reduced, protecting fire fighters, structural contents, and the environment.

*Compressed Air or Naturally Aspirated



THE HUB FIRE FIGHTER IS A HIGHLY EFFECTIVE AND COMPACT FIRE FIGHTING UNIT FOR:

- First response
- City structures
- Industrial fires
- Farms and wildland fires
- Parking structures and car fires
- Petroleum and combustible fires

TESTING

Fire departments all over the world are using Compressed Air Foam Systems with outstanding results. These are results from the Los Angeles County, California Fire Department and the Salem, Connecticut Tests.

LA COUNTY

| | WATER | CLASS A | CAF |
|--------------------------|--------------|----------------|------------|
| Foam Setting (%) | | 0.5 | 0.2 |
| Water Flow (GPM) | 90 | 90 | 90 |
| Air Flow (CFM) | | | 30 |
| Knockdown (sec) | 50 | 25 | 11 |
| Knockdown water (gal) | 75 | 44 | 16 |
| Temp Drop to 200°F (min) | 6:03 | 1:45 | 1:28 |

SALEM TESTS

| | TEMPERATURE DROP / FOUR FOOT LEVEL / 1000°F TO 212°F | |
|---------------------|-------------------------------------------------------------|----------------------------|
| | TIME (sec.) | DROP RATE (deg/sec) |
| Water | 222.9 | 3.5 |
| Foam Solution | 102.9 | 7.6 |
| Compressed Air Foam | 38.5 | 20.5 |



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