

Mayne Island Fire Rescue

Fire Department Apparatus Replacement Report



TO: Improvement District Board
FROM: Steven DeRousie, Fire Chief
DATE: December 10th 2012
SUBJECT: Replacement Apparatus to Rapid Attack

To maintain the accepted Levels of Service¹ and effective response times, apparatus reviews must be done occasionally to identify and correct deficiencies. 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. Emergency response often require the apparatus to be navigating narrow, winding driveways which are often steep with loose gravel or dirt surfaces. An initial attack rating is critical because the larger apparatus may not be able to navigate these driveways quickly or at all.

RECOMMENDATION

THAT the District purchase one (1) HUB Firefighter 200 Light Attack Apparatus assembled on a new 2013 Ford F-550 4X4 cab and chassis with a 6.7 L intercooled turbo diesel engine; 6 speed Automatic transmission; HUB Firefighter 200 Compressed Air Foam System; Foam Pro injection system; 300 imperial gallon booster tank; ULC-S515-04 tested onsite by ULC and labeled as an Initial Attack Fire Fighting Apparatus, replacing Rapid Attack.

BACKGROUND

The Mayne Island Fire Department Chief, having reviewed available information on BC based fire apparatus manufacturers and reviewing the proposed apparatus purchasing requirements; feels the best quality and value received for apparatus purchases will be from HUB Fire Engines & Equipment Ltd. of Burnaby, BC.

Rocky Mountain Phoenix, a Canadian partner with Rosenbauer America LLC is a strong contender as a supplier for Fire Apparatus to Mayne Island Fire Rescue.

Based on an evaluation of the proposed replacement apparatus and future apparatus needs, the apparatus built and serviced by HUB Fire Engines was the preferred choice. This equipment also has an Underwriters Laboratory of Canada certification. RFP's should be sought from the shortlisted BC manufacturers to ensure compliance with policy and to ensure best pricing and quality is maintained.

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."

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Representatives from the shortlisted companies were informally interviewed and gave detailed information and estimates of apparatus that will fill this Fire Departments requirements.

Estimates* are outlined in the following table and do not reflect applicable taxes or recoveries.

Apparatus	Qty. Required	HUB	Rocky Mtn Pheonix	Fort Garry	Used Market
Rescue / Light Attack	1	\$217,000* with CAFS	\$190,000* no CAFS	\$312,000 (2009 value)	Did not meet specifications
Note	9-10 months build time	\$207,000* no CAFS	BMW gasoline fueled pump engine	Did not meet specifications or budgetary constraints	No suitable combination of features

Although the HUB estimate is \$17,000 more than the Rocky Mount Pheonix Estimate, several factors should be considered in the final choice.

HUB Fire Engines & Equipment has been in business in the lower mainland since 1959. HUB is a very strong locally owned and operated company with a history of building and servicing high quality equipment. High quality equipment means fewer breakdowns, lower cost to operate, and longer life span. Being in a remote location requires ferries and couriers for parts from the city. It makes good sense to have a single supplier for all of the parts and major repairs that will be required over the 20 year life span of these high value pieces of equipment. These are very important considerations due to our remote location away from the city.

Considering the planned replacement of Tender 2 in the year 2014, and the addition of Engine 2 in 2017; HUB is expected to be remain the preferred supplier and continue to supply our future firefighting apparatus. The recommendation of choosing a single manufacturer which has a proven track record, long history of stable business futures, and quality products also reduces the likelihood of acquiring mismatched or incompatible fire apparatus.

Mayne Island Fire Rescue has a currently established good working relationship with HUB. This means HUB is responsive to our concerns and needs and has provided high rated service and warranty commitments beginning with the recent purchase of Tender 3 in 2009. (note: the manufacturer of Engine 1, Rapid Attack, and Tender 2 are no longer producing fire apparatus)

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.

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't². The HUB Firefighter 200 is listed by Underwriters' Laboratories of Canada.

² Although a tight fit, The HUB Fire Fighter 200 will be able to park in the existing Fire Hall.

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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.

Apparatus Response and Assigned Duties

To maintain the accepted Levels of Service 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 for 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 including vehicle fire and fire standby,
- Rescue including Rope Rescue, general incidents, animal rescue,
- Initial Attack Response, including structures, vehicles, outdoor and forest fires,
- Hazmat - First Responding agency, assessment, fire standby.

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, Rehydration, nutrition, 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, Dry Chemical, Water & CO² type Fire Extinguishers;
- Hazmat Initial Response: Technical Operations are provided by CRD Hazmat Team.

RAPID ATTACK IS DEFICIENT IN SEVERAL AREAS AND IS NOT CAPABLE OF FULFILLING ALL OF ITS ASSIGNED DUTIES.

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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)	
• EMA-FR - Emergency Medical Aid	Yes
• EMA-FR - Incident Standby	Yes
• EMA-FR - Community event Standby	Yes
• EMA-FR - Motor Vehicle Incident	Yes
Rescue:³	
• Rescue - 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)	
✓ EMA-FR - Emergency Medical Aid	Yes
✓ EMA-FR - Incident Standby	Yes
✓ EMA-FR - Community event Standby	Yes
✓ EMA-FR - Motor Vehicle Incident	Yes
Rescue:	
✓ Rescue - 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.

³ Rapid Attack does not have sufficient space to carry the required equipment and tools. Other Apparatus, however complimentary - have also reached their maximum capabilities and are not able to take on any additional duties.

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.

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Alternatives

Alteration of the existing Rapid Attack vehicle:

A basic review of Rapid Attack truck and body was made with the intent of determining the possibility of upgrading 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. The truck body has a total of 61.5 cubic feet of 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 categories.

Adding compartments on top of the existing body is 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 cause delays when loading and off loading the tools and equipment.

\$???. (cost estimate to upgrade body not available.)

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 certified as a 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

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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 operationally feasible nor economically viable: the cost of these modifications is too variable to estimate accurately and unforeseen costs could exceed an acceptable level partway through the project.

To modify Rapid Attack, 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. A reduction in the level of service would not be acceptable to the Fire Department nor to the Residents.

Rebuilding Rapid Attack would require purchasing or leasing a temporary replacement vehicle.

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't.

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.



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

	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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2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000	65000

	3	4	5	1	2	3	4	5													
480,923	170,923	235,923	300,923	365,923	430,923	70,923	135,923	200,923	265,923	330,923	170,923	235,923	300,923	365,923	430,923	180,923	245,923	310,923	375,923	440,923	440,923
65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000	65,000
170,923	235,923	300,923	365,923	430,923	70,923	135,923	200,923	265,923	330,923	170,923	235,923	300,923	365,923	430,923	180,923	245,923	310,923	375,923	440,923	440,923	280,923

