Form Revised: February 2005

TORONTO TRANSIT COMMISSION
REPORT NO.

MEETING DATE: **September 30, 2010**

SUBJECT: **PROCUREMENT AUTHORIZATION AMENDMENT - LOW FLOOR LIGHT RAIL VEHICLE OPTIONS: SURFACE VEHICLE SAFETY CAMERA SYSTEM, WHEEL FLANGE LUBRICATION AND TRAINING CAB SIMULATOR**

ACTION ITEM

RECOMMENDATION

It is recommended that the Commission authorize:

1) Contract Amendment No. 3 to Bombardier Transportation Canada Inc. (Bombardier) in the amount of $8,588,051.18 ($CDN) including all applicable taxes to exercise the specified option in the Low Floor Light Rail Vehicle (LFLRV) Contract C32PD08863 to incorporate a Surface Vehicle Safety Camera System (SVSCS) on the entire fleet of vehicles;

2) Contract Amendment No. 4 to Bombardier in the amount of $3,651,151.40 ($CDN) including all applicable taxes to partially exercise the specified option in the LFLRV Contract to incorporate a Wheel Flange Lubrication System on half the fleet of vehicles (102 vehicles); and,

3) Contract Amendment No. 5 to Bombardier in the amount of $4,599,984.34 ($CDN) including all applicable taxes to exercise the specified option in the LFLRV Contract for a Training Cab Simulator.

FUNDING

Sufficient funds for these contract option related expenditures for the 204 LFLRVs are included in an allowance amount as set out in Project 4.18 – Purchase 204 Light Rail Vehicles (LRVs) on pages 1051 to 1054 of the TTC 2010-2014 Capital Program as approved by the City of Toronto Council on December 8, 2009. Full funding for this $1.252 billion project was approved in June 2009, including 1/3 funding of the total cost ($417 million) committed by the Province with the remainder committed by the City of Toronto. Provincial funding will be addressed through a contribution agreement to be established with the City of Toronto and the TTC, and City funding will be sourced through a combination of debt and the application of gas tax funding.

BACKGROUND

204 LFLRVs are required to replace the existing fleet of streetcars as well as to provide for congestion relief and future ridership growth. At the August 27, 2008 Commission Meeting, staff was directed to proceed with a Structured Multi-Phase Bid Process (SMPBP) with three carbuilders (Alstom Transportation Inc., Bombardier Transportation Canada Inc., and Siemens Canada Limited) that had demonstrated experience in producing 100% low floor light rail vehicles. From September 2008 through December 2008 staff conducted technical and commercial meetings with each of the bidders in order to normalize the Proposal Documents to reflect discussions with the bidders. The Request For Proposals was issued at the beginning of January and closed at the end of February 2009.

At the April 27, 2009 Commission Meeting, the Commission authorized the award of a contract to Bombardier in the amount of $993,008,166 ($CDN), inclusive of all applicable taxes and subject to adjustment for foreign currency exchange rate variance and escalation, for the design and supply of 204 LFLRVs. The Commission also authorized the expenditure of funds up to a total allowance amount of $293,100,000 ($CDN), inclusive of all applicable taxes, with respect to the 204 LFLRVs for escalation adjustment, foreign currency exchange rate variance adjustment, spare parts, specified options, and potential contract changes for a total authorized expenditure of up to $1,286,108,166 ($CDN) inclusive of all applicable taxes.

A Surface Vehicle Safety Camera System (SVSCS) similar in feature-content to that currently installed in the fleet of CLRV and ALRV streetcars and bus fleet was intended to be a technical requirement for the LFLRVs to meet stakeholder needs. Due to potential licensing and intellectual property limitations within the supply-base identified at the time of the SMPBP there was risk that at least one carbuilder participating in the LFLRV bid process could not secure a compliant SVSCS supplier in their vehicle design. To encourage a competitive bidding environment for the LFLRV contract and to maximize the number of compliant bids, the procurement documents included a non-mandatory specified option to have the LFLRVs configured with a SVSCS as defined by the Technical Specification.

The procurement documents also included specified options for a Wheel Flange Lubrication system and a Training Cab Simulator as defined by the Technical Specification.

DISCUSSION

In June 2009, a contract for the design and supply of 204 new low floor light rail vehicles was awarded to Bombardier.

Provisions have been made for an integrated SVSCS solution that can be implemented beginning with the first prototype vehicle. Secure closed-circuit camera systems are a key tool in law enforcement and the enhancement of safety and security. A technical and commercial proposal has been negotiated with Bombardier. The SVSCS scope of supply for each of the 204 LFLRVs includes one system controller with secure hard disk drive, ten high quality video cameras, configuration and maintenance software, adjustment tools,

and one video viewing/evaluation terminal. The onboard vehicle equipment will be fully integrated into the vehicle electronics and communications architecture. Camera positions and views will be developed by project Staff in consultation with TTC Special Constable Services.

Provisions have also been made for an integrated wheel flange lubrication solution that can be implemented beginning with the first prototype vehicle. A technical and commercial proposal has been negotiated with Bombardier. The onboard lubrication equipment will be automatically controlled by the vehicle electronics and communications systems. Specific areas of the network requiring application of wheel flange lubricant can be identified by GPS coordinates to ensure efficient and focused usage in only those areas. The system functions by reducing friction at very focused areas of a vehicle's wheel flange. By reducing the friction between the wheel flanges and rail, there is reduced excitation of the wheel's resonant frequency and therefore reduced emission of the commonly heard squealing or ringing noise when a rail vehicle travels through a curve. Although the primary objective of the flange lubrication system is to mitigate wheel squeal, it is also anticipated that it will help reduce wheel and rail wear particularly on tight radius curves and loops of the streetcar network. Tests by staff and industrial reviews have demonstrated that the applied lubricant would have residual effect on the rail. It is therefore predicted that only half of the fleet of 204 vehicles is required to be outfitted with the wheel flange lubrication system to achieve the noise mitigation objective. The option to outfit the remaining half of the fleet of vehicles will be reserved and pricing to the upset limit will be further negotiated with Bombardier to take advantage of the economies of scale.

On the provision for a Training Cab simulator, staff requested that Bombardier provide two quotations based on equivalent technical and commercial requirements from two cab simulator suppliers that the Commission has experience with. The two companies were FAAC Inc. (who supplied the Commission with the bus simulator currently in use) and CORYS T.E.S.S., the supplier that Bombardier selected for the design and supply of the Toronto Rocket subway train cab simulator. The FAAC simulator was selected in this case as the lower price of the two quotations provided. The Training Cab Simulator will become an integral aspect of a broader LFLRV Training Program already included in the scope of the design and supply contract with Bombardier. The training program includes operations and maintenance manuals, training course content and evaluation methods, Computer Based Training and training mock-ups. The Training Cab Simulator will provide critical training, prior to practical operation of a LFLRV, in a controlled and simulated environment. Simulated operational training will provide guidance on safe and good driving practices, as well as efficient driving techniques for maximum energy conservation. Refresher/recertification and new / transfer employee training requirements will continue for the life of these vehicles.

A Change Directive was previously authorized and issued in the amount of $500,000.00 ($CDN) each for the SVSCS, Wheel Flange Lubrication System, and Training Cab Simulator totalling $1,500,000.00 ($CDN). Each Change Directive was based on an approved "Interim Scope of Work" that was critical to initiate planning and advanced engineering activities necessary for Bombardier and its suppliers to maintain the current design and manufacturing schedule. Each Contract Amendment requested in this report represents an increase to the previously approved Change Directive of $500,000.00 ($CDN) and is subject to adjustment for escalation in accordance with the terms stated in the Contract Documents.

Contract details are as follows:

Contract C32PD08863

Original Contract Amount	$961,708,507.74
Previous Approved Amendments	$0.00
Previous Approved Change Directives	$1,500,000.00
Amount of this Amendment #3 (less the previous Change Directive value of $500,000)	$8,088,051.18
Amount of this Amendment #4 (less the previous Change Directive value of $500,000)	$3,151,151.40
Amount of this Amendment #5 (less the previous Change Directive value of $500,000)	$4,099,984.34
Revised Contract Amount	$978,547,694.66

JUSTIFICATION

Authorizations are required:

1) To provide for the integration of the SVSCS on the LFLRVs which is necessary to meet the needs of project stakeholders including passengers, LFLRV operators, Toronto Police Services and TTC Special Constable Services by providing closed-circuit secure recording utilizing the latest proven technology;

2) To provide for the integration of the wheel flange lubrication on half the LFLRV fleet, with the option to negotiate and incorporate for the full fleet, to reduce noise emissions generated at the wheel/rail interface. Wheel flange lubrication has added benefits in increasing the life of both wheels and rail providing offsetting cost benefits with respect to vehicle and track maintenance and,

3) To provide for the design and supply of the LFLRV Training Cab Simulator. Cab Simulators have demonstrated significant value as an integral aspect of a thorough vehicle training program. Lack of a Training Cab Simulator will have impacts on the timing, logistics, scheduling, opportunities to improve on driving techniques and expense of the TTC's ongoing LFLRV training effort.

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September 8, 2010
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