Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

State of West Virginia
Solicitation Response

Proc Folder : 438901

Solicitation Description : Locomotive Traction Control Unit

Proc Type : Agency Purchase Order

Date issued	Solicitation Closes	Solicitation Response	Version
	2018-05-16 11:00:00	SR 0804 ESR05081800000005071	1

VENDOR

000000179685

NATIONAL RAILWAY EQUIP.

Solicitation Number: ARFQ 0804 RMA1800000002

Total Bid : $0.00 **Response Date:** 2018-05-08 **Response Time:** 12:42:24

Comments:

FOR INFORMATION CONTACT THE BUYER

Dusty J Smith

(304) 558-9398
dusty.j.smith@wv.gov

Signature on File **FEIN #** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Traction Control System	0.00000	EA	$44,500.000000	$0.00

Comm Code	Manufacturer	Specification	Model #
73161603			

Extended Description : Traction Control System for SBVR 102 - (GP38) locomotive

Comments: This total can be reduced by $5000.00 if you provide electronic electrical prints to us instead of paper hard copies. Further details are provided in the attached bid quote.

NRE
1100 Shawnee Street
Mt Vernon, Ill 62864

Quote

To:	West Virginia DOT 1900 Kanawha Blvd. East Charleston, WV 25305	**Quote No:** **Terms:** **Delivery:** **F.O.B.**	EST180504-01 Net 30 See below
Attn:	Dusty Smith	**Freight:**	Prepaid
		Cust. No:	N/A
		Prices:	Firm 30 days
Subject:	GP38 Locomotive Traction Control Unit	**Date:**	May 07 2018

Intentionally left blank

INTRODUCTION
This Quote is in response to your Solicitation RMA1800000002 dated May 3, 2018 to design and implement an NFORCE microprocessor control system for one (1) West Virginia DOT GP38 locomotive.

SCOPE
This document will describe the technical requirements for the design, manufacture and acceptance of an NRE NFORCE microprocessor locomotive control system for one (1) West Virginia GP38 locomotives.

EXCEPTIONS
None

NONRECURRING COST
Your locomotive print and wire run list will be reworked to incorporate NRE's "NFORCE" traction control system. This cost can be reduced by **$5,000** if an AutoCAD copy of the current locomotive print and Microsoft Excel copy of the wire run list are provided to us. Be advised that a "Red-Line" existing print markup will be provided at no charge if a paper hard copy print is provided to us.

COST, ONE NFORCE SYSTEM WITH NLIMIT (AESS)
The **Total cost for this project is $44,500** in single quantities. Materials would consist of an NFORCE module box (with NLIMIT) supporting harnesses, and miscellaneous ancillary equipment. An AutoCAD copy of the updated print is also included. An NFORCE kit part number will be provided at time of order.

The following options would be included per your specification:

- D32 DC Main Generator Control & Protection
- Generator Field Control by means of BFD module
- Dynamic Braking Control
- DB Extended Range (If equipped)
- Transition Control
- Field Shunting Control (If equipped)
- Ambient Based D77 Traction Motor Protection
- Voltage & Current Based Adhesion
- Sanding Control
- Self-Load Control
- Road/Yard Control
- Traction Motor Cutout Control from TMC Switch
- Engine Cooling Fan Control
- Engine Governor Control
- Air Compressor Control
- Automatic Ground Relay Control
- NVISION Touch Screen
- Alarm/Failure Monitoring
- Control system Event Logging
- Duty Cycle Logging

NOTE: Our standard NVISION III screen is available and would reduce the total price by **$4,000** - it provides the same information as the quoted NVISION Touch Screen.

As information for your review, the following options are available at additional cost:

- *NCOMPASS (location monitoring & software communication system)*
- *Battery Charging Control (DC AUX GEN)*
- *Contactor & Relay Control (Magnetic Switchgear)*
- *Load Meter Control*
- *AESS Integrated Idle Limiting*
- *NRE Electronic Actuator (with load regulator, a no oil system)*
- *Slow Speed Control*
- *Integrated Event Recorder*

.

ASSUMPTIONS

This estimate assumes the following:

- Should it be determined that on-site support is needed it is available upon request at an extra charge.
- Phone and email support covering software and hardware is available for 2 years or as long as you have our equipment.
- It is understood that the NFORCE Operational Manual is all that is required for training materials.
- We are providing the described materials only and we are not responsible for the installation.

PROJECT DELIVERABLES

- Locomotive Disconnect & Installation Document: 8 weeks from receipt of order
- Hardware: 8 weeks from receipt of order
- Software & Validation Procedure: 8 weeks from receipt of order
- Final software & reference documents: 2 week after completion of validation

Thank you for the opportunity to quote your requirements. If you should have any questions or need any additional information, please feel free to contact me.

Sincerely,

Steve Sonni

Steve Sonni

s.sonni@nre.com.
Key Account Manager
Commuters & Government
Cell: 206-669-3744
www.nre.com

NFORCE LOCOMOTIVE CONTROL SYSTEM

UPGRADE YOUR LOCOMOTIVE CONTROL SYSTEM

New locomotives manufactured today feature improved adhesion, greater reliability, better diagnostics capability and enhanced features over pre-microprocessor locomotives. The NFORCE Control System uses the latest technology specifically to allow aging locomotives to be upgraded to a level of performance matching that of their modern counterparts.

The heart of the NFORCE Control System is a powerful microprocessor that controls the various locomotive systems. The NFORCE System is based on a modular concept, in which functions can be added later without changing the entire system.

The NFORCE System can include the optional NVISION Display Panel (Operator Interface Panel), through which the complete system can be monitored or troubleshooting functions can be performed.

WWW.NRE.COM
sales@nre.com / 618-241-9270

PRIMARY FEATURES

Main Generator Control
Transition Control
Field Shunting Control
Advanced Wheel Slip/Creep Control
Traction Motor Management
Motoring & Dynamic Braking Control
Speed Indicator Drive
Automatic Sanding Control

OPTIONAL FEATURES

Vigilance System
Slow Speed Control
Idle Limiting Control
J1939 CAN Communications
Engine Governor Control
Radiator Shutter & Cooling Fan Control
Air Compressor Control
Automatic Ground Relay Reset
Battery Charging Regulation
Contactor & Relay Control
Traction Motor Cutout Control
NVISION Operator Interface Display
Load Meter Control
NGAUGE Fuel Monitoring
NCOMPASS Wireless System

BENEFITS

Initiate locomotive tests from a laptop computer or optional NVISION Display Panel.

Operator Initiated tests include:
- Contactor & Relay tests
- Cooling Fan test
- Self-Load tests (Grids or Load Box)
- Load Meter calibration and tests

Advanced wheel slip/creep control increases dispatch adhesion.

Increased adhesion results in higher starting loads and greater gross tons per mile freight haulage. Additionally, increased adhesion reduces wheel slips and spins that result in excessive wheel wear, traction motor stress and rail damage.

Motor management software calculates heat build-up in the traction motors.

NFORCE monitors loading on the traction motors, logging motor stall alarms based on software calculations. Power is reduced as needed to prevent costly traction motor damage and on-line failure.

Reduce electrical cabinet relays by up to 75 percent.

With NFORCE's reduced need for relays, and therefore, fewer crimp connections, the results are fewer failures resulting from poor connections, broken wires and faulty relays.

Perform and display Self-Load tests in real time.

Self-Load tests can be performed quickly. The optional NVISION Operator Interface Panel displays voltage, currents and horsepower directly on the screen for immediate verification of correct locomotive loading to ensure road service locomotives operate at full power and maximum efficiency.

Optional integrated slow speed control.

Slow speed control operation is designed to run in a notch position that guarantees adequate traction motor cooling. This prevents costly damage from excessive heat build-up in the traction motors when loading in low speed operations. With an integrated system, the need for a separate -and costly- slow speed control system is eliminated.

Optional electronic engine temperature control.

NFORCE eliminates existing water manifold temperature switches, replacing them with a reliable solid-state sensor. Cooling fans are cycled to maximize operating life.

Optional integrated Idle Limiting Control reduces fuel consumption and exhaust emissions.

By monitoring locomotive operating parameters, NFORCE automatically shuts down and restarts the engine during locomotive idle times.