

# **EC-RAC MOU Regarding Locomotive Emissions**

## **MEMORANDUM OF UNDERSTANDING**

**Between  
ENVIRONMENT CANADA  
And The  
RAILWAY ASSOCIATION OF CANADA**

### **PART 1 - INTRODUCTION**

The purpose of this document is to set out the principles of the basic agreements reached among The Railway Association of Canada (RAC), The Canadian Council of Ministers of the Environment (CCME) and Environment Canada (EC) with respect to the control of emissions of oxides of nitrogen (NO<sub>x</sub>) produced by locomotives during all rail operations in Canada.

The MOU has been developed from the recommendations contained in the joint Environment Canada and Railway Association of Canada (EC/RAC) report entitled "Recommended Reporting Requirements for the Locomotive Emissions Monitoring (LEM) Program".

### **PART 2 - BACKGROUND**

The Railway Association of Canada, being an association of environmentally concerned corporations doing business in Canada, proposed, to the Canadian Council of Ministers of the Environment (CCME), a voluntary cap on the total emissions of oxides of nitrogen from locomotive engines in Canada of 115 kilotonnes per year. The RAC proposal for a voluntary cap on NO<sub>x</sub> emissions has been included in the CCME NO<sub>x</sub>/VOC Management Plan and is officially validated by this MOU.

### **PART 3 - THE PROGRAM**

Between January 1, 1990 and December 31, 2005 the RAC will endeavour to collect all data necessary to calculate the total amount of emissions of oxides of nitrogen (NO<sub>x</sub>) produced during all rail operations in Canada and, if necessary, take whatever action is necessary to avoid exceeding the agreed maximum NO<sub>x</sub> emissions of 115 kilotonnes per year.

RAC will make every effort to report once per year to Environment Canada in the manner described below. The data collected should represent the activity of all RAC members and the RAC will endeavour to encourage Associate members of the RAC and non-members to participate in the data reporting.

The RAC also agrees to monitor developments in railway operations technology and encourage member railways to implement new cost effective technologies that will reduce the NO<sub>x</sub> emission from their new equipment.

### **PART 4 - REPORTS**

As outlined in the joint EC/RAC report entitled "Recommended Reporting Requirements for the Locomotive Emissions Monitoring (LEM) Program", the RAC will make every effort to submit to Environment Canada annual reports containing the following information;

1. A list of the Gross-Ton-Miles (GTM), Net-Ton-Miles and total fuel consumption data for railway operations plus estimates of the emissions of nitrogen oxides (NO<sub>x</sub>), hydrocarbons (HC), sulphur oxides (SO<sub>x</sub>), particulate matter (PM), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>) using the RAC emission factors as corrected in Table 9 of the Report referenced above. All fuel consumption and emissions data will be listed separated with respect to passenger, freight and yard switching services. These data will be submitted for the reporting year and will include revised projections for years 1995, 2000, and 2005;
2. In addition to the national aggregate figures, fuel consumption and emissions should be provided for each Tropospheric Ozone Management Area (TOMA) as geographically defined in the NO<sub>x</sub>/VOCs Management Plan (CCME, 1990);

3. The emissions data for the TOMA's should be further separated into two additional categories: the Winter Months and the Critical Ground Level Ozone Forming Months of May, June, July, August and September;
4. Updated information should be provided about the composition of the locomotive fleet by year of manufacture, horsepower, engine model, duty type and railway company;
5. A brief written update should be provided on the progress of the railway industry in introducing new, more NOx efficient operating procedures and/or technology in rail operations;
6. Companies should submit a report on any emissions control systems, hardware or techniques installed or implemented during an engine rebuild program which would effect NOx emissions;
7. A report should be provided on new emissions performance data and new emissions factors for locomotives operated by the railways obtained from the AAR, the manufacturers or other agencies;
8. Information should be provided about changes in the properties of diesel fuels used when the properties significantly depart from those specified in the Canadian General Standards Board Specifications CAN/CGSB-3-18-92, entitled Diesel Fuel for Locomotive Type Medium Speed Diesel Engines. Data should be reported from any tests on the sensitivity of emissions from various locomotive engines to fuel quality or to alternative fuels; and
9. A brief report should be provided on the progress and success of any other emissions reduction initiatives or changes in operational procedure, as well as any major changes in the type of duty cycles or service that would significantly affect emissions and their relative percentage of the overall railway operation.

The RAC will make every effort to submit an annual report containing all of the information indicated above by June 30th of the year following the report year. The first report covered by this MOU will be for the year 1990 and the last report under this MOU will be for the year 2005.

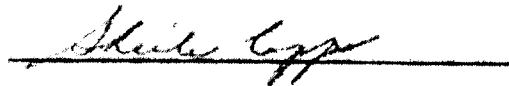
#### PART 5 - GENERAL

The baseline of 115 kilotonnes per year for locomotive NOx emissions is based upon the best technical information that was available by the end of 1989 and on projections for traffic increases. It is understood that, if new emissions factors significantly departing from those used to determine the baseline are developed as a result of advanced research on engine emissions or if the rail traffic growth rate is significantly impacted by a shift of traffic from or to another mode of transport, a new environmental review will be initiated.

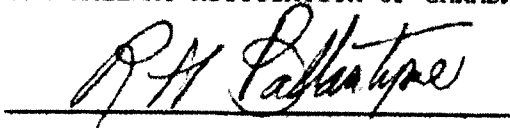
Although both of the parties hereto have indicated by their signature, acceptance of the principles set out herein, this Memorandum of Understanding (MOU) is not intended to create a legally binding agreement and shall not be construed as creating enforceable contractual obligations among the parties hereto.

DATED at this day of 1995

MINISTER OF THE ENVIRONMENT

  
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THE RAILWAY ASSOCIATION OF CANADA

  
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