FREIGHTLINER CORPORATION
4747 N. Channel Ave.
Portland, Oregon 97217
503/283-6020

ROGER W. SACKETT
Executive Vice President-Engineering

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April 21, 1981

Mr. Charles L. Elkins
Deputy Assistant Administrator
for Noise Control Programs
United States Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Elkins:

In your letter of April 1, 1981, you listed several questions regarding Freightliner's Petition for Reconsideration, 1982 Medium and Heavy Truck Noise Emission Regulations, which was sent to you on March 3, 1981. We have carefully analyzed the questions raised in your letter and are pleased to submit the attached response.

One point which was not covered in our petition but which I would like to emphasize now is that I do not believe that elimination of the current 83 dB(A) regulation would be in the best interests of the people of the United States nor of the trucking industry. The 83 dB(A) regulation has served a very useful purpose. It has lowered truck noise emission levels and placed all truck manufacturers on an equal footing, thus eliminating any free market incentive for building trucks louder than the norm. Removal of the 83 dB(A) regulation and its federal pre-emptive status would not provide any additional regulatory relief, and in fact would place an additional burden on manufacturers. In the absence of a federal regulation, manufacturers would be forced to comply with a variety of non-uniform state and local regulations, which would greatly increase the cost of testing, vehicle development, and record keeping. Thus, we are on record in supporting the current 83 dB(A) regulation.

Letter to Mr. Charles L. Elkins

I would also like to point out that we are in the process of reviewing the compliance testing and reporting procedures for the current regulation in an effort to identify ways to make these procedures less costly and burdensome to truck manufacturers and the EPA, but still ensure compliance with the regulation. We will be sending our suggestions to you in the very near future.

Yours sincerely,

Roger W. Sackett

RWS/dsb

attachment

Response to EPA Letter Dated April 1, 1981.

1. Productivity - The economic definition of productivity that we use is shown below:

$$\text{Productivity} = \frac{\text{Goods and Services Produced}}{\text{Resources Consumed}}$$

We believe the EPA is well aware of the resources consumed in meeting an 80 dB(A) regulation and has repeatedly analyzed the associated capital and operating costs. An 80 dB(A) regulation would result in increased manufacturing costs, increased vehicle maintenance costs, and increased fuel consumption. The increased fuel consumption results from the additional weight of noise attenuation panels and the increased weight of redesigned components. Quite obviously, all of these things will result in increased resource consumption. The EPA has attempted to quantify the costs of all of these items, and while there is still considerable discussion concerning what the total costs are, there is little disagreement on the fact that the price tag is substantial. We are unaware of any increase in goods or services produced that would result from an 80 dB(A) regulation. Hence, we are forced to conclude that since an 80 dB(A) regulation would require increased resource consumption with no increase in goods or services produced, productivity would decline.

2. Tire Noise - At the outset, we would like to clarify two points. First, we are not just inferring that the EPA has underestimated tire noise, we are stating that the computer modeling results available to us conclusively show the EPA has underestimated the impact of tire noise. Secondly, we would like to reiterate that in our petition, besides suggesting modeling procedures and demographic information as being the reason for the difference in EPA and Battelle model results, we also suggested that the reason for the discrepancy could be in how the model results were interpreted. We would like the EPA to bear this in mind as they review the Battelle Laboratories computer noise model, and the results therefrom.

We are pleased that the EPA is taking a detailed and active interest in the Battelle computer model and is going to scrutinize all the modeling assumptions and background data. The results cited in Freightliner's petition were extracted from a computer model developed by Battelle Laboratories under contract to the Motor Vehicle Manufacturers Association of the United States (MVMA). MVMA has responsibility for administration of the computer model and is willing to provide the EPA with the information requested in EPA's letter. The information you requested in your letter (section 2, items a through h) may be obtained from MVMA by contacting:

Mr. Nelson Fabian
Staff Engineer - Environmental Activities Staff
Motor Vehicle Manufacturers Association
300 New Center Building
Detroit, Michigan 48202
phone (313) 872-4311

3. Transmissions - The EPA has asked for additional supporting evidence of our claim that the primary reason for the current transmission redesign effort is the 80 dB(A) noise regulation. To support our claim, we are forwarding a copy of a letter from

Mr. Derek Dawson, General Manager
Eaton Corporation
Transmission Division

to

Mr. Robert Edstrom, Senior Research Engineer
Freightliner Corporation.

Eaton Corporation is a major transmission supplier for Freightliner vehicles. In this letter, Mr. Dawson points out the following:

"To meet the 70/72 dB(A) requirement for heavy duty truck transmissions, it is necessary to change the type of gearing being used.* More specifically, this change is to higher contact ratios.

Utilization of this fine pitch, higher contact ratio gearing (increase in number of gear teeth) requires more precision gearing than is currently being used.

The truck fuel efficiency and performance demands would require modifications in the gear ratios of the transmissions, and not the modification in the gear tooth contact ratio (or pitch). The type of gearing (multi-mesh) is independent from the gear ratios in the transmission. In fact, Eaton's new 1982 model transmissions have essentially the same gear ratios as the old models, but the gearing was changed to multi-mesh for reducing the noise emission.

This results in the total cost of this program to be estimated at approximately $21,000,000.

This amount does not include the costs incurred of carrying additional inventories of new design service parts while maintaining service parts availability of the current design level parts.

As a result of the added manufacturing operations that must be performed, as well as the absorption of the costs associated with the added capital expenditures, the selling price of the product will have to be increased.

The result of the program will be a quieter transmission that requires added labor content to produce. The durability of the transmission cannot be classified as improved, nor has the useful life been extended. Consequently, the Division will produce a higher cost, quieter transmission

*To meet the 80 dB(A) overall noise requirement for the total vehicle, transmission noise as a single source cannot exceed the 70-72 dB(A) level.

that has the same useful life that the transmission being produced today has. The program has consumed both financial and human resources that might have been better utilized to extend the life of the transmission or reduce the cost of it."

We believe these comments conclusively support our contention that the current transmission redesign effort was precipitated by the 80 dB(A) regulation, not due to truck fuel efficiency and performance as the EPA has contended. We would again like to reiterate that the costs of the current transmission redesign effort should be assigned to the 80 dB(A) regulation.

4. Econometric Models - The EPA has made a creditable effort to do thorough econometric modeling and we are not questioning the integrity of such efforts. However, the short term performance of EPA's predictions does serve to point out the fallibility of the current "state-of-the-art" in econometric models. Given the poor performance of such models in the short run, there are serious questions about placing much credibility in the results for long term predictions and using such long term predictions to justify additional noise regulations.

   While it is laudable that the EPA is attempting to update the economic analyses, it is doubtful whether today's predictions will be any better than the last set of predictions, given the volatile nature of the parameters involved in the econometric projections. Recognizing this, we believe that EPA's only recourse is to be extremely conservative in estimating the costs associated with any proposed new regulation.

   Our own forecasting capabilities are quite limited and generally geared toward more near term projections. We usually respond to market pressures and changing competitive positions more than trying to make long term predictions. However, based upon Freightliner's best estimates, we offer the following suggestions for EPA's use in updating its econometric forecast:

   a. Class 8 production levels will not return to 1979 levels until 1984.

   b. Usage of modulated fans in Class 8 vehicles has already reached virtually 100% for reasons of improved fuel economy. No additional fuel economy gains will result from an 80 dB(A) requirement.

   c. Currently, the prime interest rate is 17-1/2%. We do not anticipate the prime rate dropping below 14% for at least two years. Customer interest rates are generally 1% higher than prime.

   d. Typical price for diesel fuel is $1.15/gallon. We anticipate that this price will increase by 10% per year, resulting in a price of $1.53/gallon by April 1984.

5. Compliance Costs - From the questions asked by EPA concerning the data on page 12 of our petition, it appears there may be some confusion on what the estimates are and are not. The figures are not sales weighted across Freightliner's available truck models. Rather, as explained in

our petition, the figures represent the costs that would be borne by one of Freightliner's customers if the 80 dB(A) regulation were implemented. These costs were computed over a 5 year replacement cycle for Consolidated Freightways Corporation of Delaware (CFCD) and are based on CFCD replacement rates and vehicle specifications. These vehicles include a mixture of heavy duty vehicles and medium duty vehicles. Freightliner supplies only the heavy duty vehicles to CFCD, not the medium duty vehicles. Hence, we have used EPA estimates for the costs on medium duty vehicles and Freightliner engineering estimates for the heavy duty trucks. Sales projections were not used to calculate the numbers. Instead, projected replacement rates were used based upon CFCD's vehicle replacement program. The replacement rates and vehicle specifications are considered confidential customer information, and we are not at liberty to release them.

Noise treatments in the estimates included the following: quieter vendor supplied engines, Freightliner noise panels, improved exhaust system, and quieter vendor supplied transmissions. Because many of these components are vendor supplied, the vendors ultimately determine what the costs of the noise treatments will be. Most of our vendors are currently unwilling to make a firm commitment for their noise packages, and some are unable to even provide estimates. The numbers supplied in Freightliner's petition represent an educated engineering estimate of what the vehicle price increase would be for vehicles built to typical CFCD specifications.

Because of the highly customized nature of the vehicle we build, it is difficult to supply noise treatments by vehicle type. In our current record keeping program of vehicle noise configurations, we have over 300 separate vehicle noise categories, and many of the noise treatments for our vehicles are on a case by case basis. Another problem with trying to supply detailed cost estimates on the impact of the 80 dB(A) regulation at this time is that we have not finished our noise testing program and don't know what all our 80 dB(A) noise packages would look like. Likewise, our vendors have not finished their 80 dB(A) development work, so costs of vendor supplied components have not been completely finalized. Our best educated engineering estimate is that the additional noise control hardware would cost the customer between $400-$800 per vehicle, depending on the vehicle configuration.

Attachment

Eaton Corporation
Transmission Division
North American Headquarters
P.O. Box 4013
Kalamazoo, Michigan 49003
Telephone (616) 342-3000
Cable "FULCO"

April 14, 1981

Mr. Robert Ekstrom
Senior Research Engineer
Freightliner Corporation
4747 North Channel Avenue
Portland, Oregon 97208

Dear Mr. Ekstrom;

EATON

In response to your question relating to item 3 on page 2 of Mr. H. E. Thomas' letter, we would like to state the following:

To meet the 70/72 dB(A) requirement for heavy duty truck transmissions, it is necessary to change the type of gearing being used. More specifically, this change is to higher contact ratios.

Utilization of this fine pitch, higher contact ratio gearing (increase in number of gear teeth) requires more precision gearing than is currently being used.

The truck fuel efficiency and performance demands would require modifications in the gear ratios of the transmissions, and not the modification in the gear tooth contact ratio (or pitch). The type of gearing (multi-mesh) is independent from the gear ratios in the transmission. In fact, Eaton's new 1982 model transmissions have essentially the same gear ratios as the old models, but the gearing was changed to multi-mesh for reducing the noise emission.

This results in the total cost of this program to be estimated at approximately $21,000,000.

This amount does not include the costs incurred of carrying additional inventories of new design service parts while maintaining service parts availability of the current design level parts.

As a result of the added manufacturing operations that must be performed, as well as the absorption of the costs associated with the added capital expenditures, the selling price of the product will have to be increased.

The result of the program will be a quieter transmission that requires added labor content to produce. The durability of the transmission cannot be classified as improved, nor has the useful life been extended. Consequently, the Division will produce a higher cost, quieter transmission that has the same useful life that the transmission being produced today has. The program has consumed both financial and human resources that might have been better utilized to extend the life of the transmission or reduce the cost of it.

It is of great concern that further requirements in terms of regulated noise reduction will have even further dramatic impacts in terms of cost effectiveness.

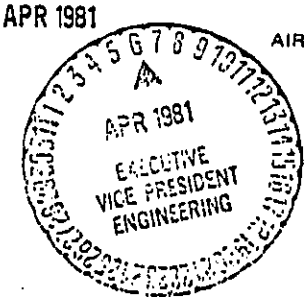
Derek Dawson
General Manager

DDgl

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C 20460

1 APR 1981

OFFICE OF
AIR, NOISE, AND RADIATION
(ANR-490)



Mr. Roger W. Sackett
Executive Vice President
Engineering
Freightliner Corporation
4747 N. Channel Avenue
Portland, Oregon 97208

Dear Mr. Sackett:

The Agency has received your petition dated March 3, 1981 for an indefinite deferral or withdrawal of the 80 dB noise emission regulation for medium and heavy trucks. On January 27, 1981 the Agency deferred the effective date of the 80 dB noise emission regulation for medium and heavy trucks from January 1, 1982 to January 1, 1983. Included in this deferral was a request for public comment on whether or not the one year deferral was sufficient. On March 19, 1981 the Agency published a Federal Register Notice (copy enclosed) widening the request for public comment to include consideration of whether or not the 80 dB regulation should be rescinded. Since in your petition you request withdrawal of the 80 dB regulation, which is within the scope of comments requested in the March 19 notice, I have included your petition in the Medium and Heavy Truck docket. Final action by the Agency on the disposition of the 80 dB noise emission regulation will be taken only after a complete analysis of all relevant comments and issues, including an analysis of those issues raised in your petition, is conducted.

Our initial review of your petition revealed gaps in the data supporting several of your major contentions. These gaps make it difficult for us to fully assess the merits of your submission. In addressing this very important issue of the 80 dB standard we want to make the fullest use of the expertise of the companies affected by the regulation and the information available to them. Therefore, I have included as an enclosure a list of technical points on which we would appreciate clarification. We realize that some of the requested data may be proprietory. We, of course, will treat any data so identified in accordance with established Agency policy for the protection of such confidential and proprietory materials.

Sincerely,

Charles L. Elkins

Charles L. Elkins
Deputy Assistant Administrator
for Noise Control Programs

Enclosure

FREIGHTLINER PETITION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR WITHDRAWAL OF THE 80 dB NOISE EMISSION REGULATION FOR MEDIUM AND HEAVY TRUCKS

1. On page 4 of your petition you indicate that the 80 dB noise emission regulation will result in decreased productivity. Could you please elaborate on this matter and provide us with documentation.

2. On page 6 of your petition, you state that tire noise is more significant than previously taken into account by EPA. Specifically, you believe that EPA had used incorrect modeling procedures and inaccurate demographic information. You infer from data supplied by Battelle Laboratories to you that EPA has underestimated tire noise dominated impacts by a factor of four.

   In order for us to fully assess the tire noise contribution and the differences between the Battelle data and EPA's we would appreciate the following information:

   a) tire noise emission levels as functions of vehicle category, speed, tire type and tread design.

   b) vehicle emission levels as functions of vehicle category and operating mode for both unregulated and regulated vehicles.

   c) vehicle population data including baseline population, projected growth, and projected market share by vehicle category.

   d) vehicle survivability data by vehicle category.

   e) national population data and projected growth.

   f) population distribution by roadway type and activity category.

   g) roadway mileage, configuration, and travel data.

   h) traffic noise propagation and attenuation schemes.

3. On page 8 of your petition you state that transmission vendors have indicated to you that current transmission redesign efforts have been precipitated by the 80 dB noise regulation and not by fuel efficiency and performance demands.

   Since this information is not consistent with information the Agency has received, we would appreciate receiving any data, correspondence, or reports that you have received from transmission vendors that the prime thrust for current transmission redesign efforts is the 80 dB noise regulation.

4. On pages 8 and 9 of your petition you question the accuracy of EPA projections for fuel prices, medium duty diesel market share, interest rates, market growth rates, and trends toward modulating fans.

To the extent possible, we have endeavored to use for our economic impact analysis the most recent, reliable econometric projections prepared by nationally recognized firms. Given the volatile nature of some of these parameters, the Agency has taken a liberal approach with the result that our estimates of costs are generally overstated.

The Agency intends to carefully review and update, if necessary, its economic analysis of the 80 dB regulation. Therefore, we would appreciate receiving your best estimates of the future trends for the above mentioned items.

5. On page 12 of your petition you discuss your estimates of the cost of compliance with the 80 dB regulation. Based on preliminary results from our most recent reassessment of the economic impact of the 80 dB regulation, it appears that the Agency has overestimated the quieting, fuel, and maintenance costs associated with the regulation. So that the Agency may further fine tune these costs, we would appreciate your suppling the following data to support your cost figures:

   a) you estimate quieting costs to be $563 for the 4 x 2 heavy diesel and $546 for a 6 x 2 heavy diesel.

      (1) Are these costs sales-weighted across Freightliner's available truck models? If so, please supply the cost and projected sales data on which these figures were derived.

      (2) What noise treatments do these costs include? Please indicate noise treatments and associated costs by truck model. Please include those costs associated with the quieter Freightliner configurations, i.e. those below 80 dB and those above 80 dB.

   b) In your fuel and maintenance cost figures you used EPA estimates. We have reason to believe these estimates grossly overstate the true cost of the regulation. We would appreciate your fuel and maintenance cost estimates by truck configuration, and any supporting documentation.

   c) Please explain the manner in which the cost figures used in the table on page 12 were derived. Also, we would appreciate receiving the vehicle sales projections that you employed by vehicle category.