Department of Energy
Washington, DC 20585

AUG 23 2001

Mr. Dick Shepherd
Rentech, Inc.
1331 17th Street
Suite 720
Denver, CO 80202

Dear Mr. Shepherd:

We are continuing to evaluate your petition, dated 7/20/99, to have Rentech Fischer-Tropsch diesel fuel designated as an alternative fuel under the U.S. Energy Policy Act of 1992.

We are conducting a completeness review to determine that sufficient data have been provided, and a technical review of the data to evaluate the candidate fuel.

To be deemed "complete," a petition must include sufficient data to allow the Department to determine if the candidate fuel meets the statutory criteria, specifically, whether the fuel: 1) is substantially non-petroleum; 2) would yield substantial energy security benefits; and 3) would yield substantial environmental benefits. At the beginning of our technical review, we identified some questions that ,when resolved, will help us in making our determination.

One of the attachments to this letter contains tables that will assist you in recording the appropriate data needed by the Department to finish our completeness review. Adherence to this format is not required, but would facilitate our review.

As we continue our review process, we would like to inform you of our overall plans for disposition of your petition. The Department has received two petitions, similar to yours, to designate diesel fuels made using the Fischer-Tropsch process (or variants of that process). After performing the review process, we plan to hold a workshop to solicit information and comments on all complete petitions. This workshop will be open to the public and allow us to gather more input regarding Fischer-Tropsch processes and products.

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When the notice is published, your petition, and the other two petitions, will be placed in the public docket. The approach we have chosen will facilitate an expedited petition review and allow the Department to initiate our rulemaking as soon as possible.

We are requesting that the petitioners reply to us with the answers to the attached questions within 30 days of the date of this letter.

We believe this approach will facilitate an efficient resolution of your petition. Should you have any questions, please contact me at 202-586-6116.

Sincerely,

Linda Bluestein

Linda Bluestein
Program Manager
Alternative Fuel Transportation Program

Attachment 1

Petition Reviewers' Questions

1. ***FTD Feedstocks.*** Among the various feedstocks cited by Rentech (coal, petroleum refinery bottoms, natural gas), which one(s) is(are) the feedstock(s) Rentech is proposing for this petition? The choice of feedstocks will certainly have energy and emission impacts on FTD production. If Rentech is petitioning for all the feedstocks, energy and emission impacts need to be assessed for all.

2. ***Syngas Production Technology.*** Among the three syngas production technologies (SMR, POX, and ATR), which one is the technology (and for which feedstock) to be used by Rentech in its designs? This will have different energy and emission impacts for FTD production.

3. ***Discussion of Natural Gas to FTD (p.2-3).*** While Rentech maintains its intention of petitioning FTD from several feedstocks, the discussion here implies that this petition is intended for natural gas-based FTD. Please clarify the petition coverage clearly and conduct analysis according to the intended petition coverage.

4. ***Fuel Properties.*** The following fuel properties are needed for Rentech FTD and naphtha:

   a. Sulfur content by weight

   b. Carbon content by weight

   c. Heat content (both HHV and LHV, Btu/gal)

   d. Density (kg/liter or grams/gallon)

   Some of the fuel properties presented by Rentech are based on tests conducted by CARB in 1984. These tests may be out of date. Please provide updated information.

   Also, fuel properties need to be presented for FTD and naphtha that are produced from coal, natural gas, refinery bottoms, and other feedstocks that Rentech intends to include in this petition.

5. ***GHG Emission Impacts.*** Rentech simply cites the study by Mitretek, which was based on FTD production designs that could be different from Rentech's design. Also, the coal-to-FTD pathway that Mitretek evaluated may not be economically practical at present. In any event, the Mitreteck results are irrelevant to Rentech technologies and fuels. A GHG emission analysis with Rentech's own design data is needed.

6. ***FTD Production CO_2 Emissions.*** "An analysis of the net carbon dioxide emissions used to produce a gallon of Rentech's F-T diesel fuel shows a positive balance and a net decrease in carbon dioxide emissions over that for the production of conventional diesel fuel." (Page 8) Please provide technical support for this statement.

7. ***Energy Conversion Efficiency.*** Based on the data on Page 8 (10 mmBtu of feedstock to produce a barrel of clean diesel), we calculate that the Rentech technology has an energy conversion efficiency of 58.7%. Please explicitly present energy and carbon efficiency of Rentech FTD design.

8. ***CARB 1984 Study.*** Please comment on why the CARB study was used in the petition. The study by CARB with Rentech fuels in 1984 may be out of date and may have less relevancy to this petition.

9. ***Values of Input and Output Items.*** In the Rentech presentation to California Energy Commission, Rentech presented a flowchart of its FT process. Quantitative values for the input and output items in this flowchart are needed for Argonne to conduct a quantitative analysis of energy and emission impacts of Rentech FTD. In particular, we'd like to have:

    a. The amount of natural gas input

    b. The amount of oxygen input, and the energy use per unit of oxygen produced for Rentech process

    c. The amount of electricity exported

    d. The amount of naphtha produced

    e. The amount of clean diesel produced

    f. The amount of wax produced.

    Preferably, the amount of inputs and outputs may be presented in per hour or per day basis.

10. ***References.*** The references Rentech presented in its petition are mostly open literature for FTD in general, not for Rentech FTD in particular. What is the value of including this open literature?

11. Provide a definition for each gas-to-liquid fuel formulation covered in the petition. Provide fuel properties and emission results for testing performed on the formulations.

12. What is the aromatic, olefinic, and paraffinic content of Rentech diesel by ASTM D5291 or equivalent method?

13. What are the physical and chemical property specifications for Rentech diesel?

14. Are results available for the biodegradability of Rentech diesel per ASTM E1720-95 or equivalent method (OECD method 209 or Pseudomonas putida Growth Inhibition Test)?

15. Does MSDS type information exist regarding exposure information for Rentech diesel (for example oral acute toxicity, eye irritation, skin irritation, and bioaccumulation)?

16. The petition gives a batch analysis of the Rentech diesel with the emissions test results. Is the analysis typical of the Rentech diesel covered in the petition? Of not, which fuel properties may vary? How much can the fuel properties vary from the results given in the batch analysis in the petition?

17. Provide the oxygen content, in percent, of the Rentech diesel.

Attachment 2

Table 1. Co-Product Outputs Per Million Btu of Fischer-Tropsch Fuel

Output	**Relative Btu Content**
Fischer-Tropsch Fuel	1 million Btu
Co-Product #1: _____	_____ Btu
Co-Product #2: _____	_____ Btu
Co-Product #3: _____	_____ Btu
Co-Product #4: _____	_____ Btu
Co-Product #5: _____	_____ Btu
Co-Product #6: _____	_____ Btu

Table 2. Energy Inputs Per Million Btu of Fischer-Tropsch Fuel

Energy Inputs	**Relative Btus**
Natural Gas	_____ Btu
Diesel Fuel	_____ Btu
Gasoline	_____ Btu
Petro-Chemical (specify all)	_____ Btu
Coal	_____ Btu
Electricity	_____ Btu
Other	_____ Btu
Other	_____ Btu
Other	_____ Btu

Table 3. Emission Outputs for Fischer-Tropsch Fuel and Co-Products of Table 1 with Corresponding Energy Inputs of Table 2

	Criteria Emissions, grams			Greenhouse Gases, grams			Air Toxics, grams				
	NMHCs	CO	NOx	CO_2	Methane	N_2O	Benzene	1,3 Butadiene	Formal-dehyde	Acetal-dehyde	Acrolein
Totals											

Note: Values for Criteria Emissions and Greenhouse Gases are mandatory; provide air toxic data as known

Table 4. Key Plant Information

Energy Efficiency (excluding co-generated steam or electricity in Table 1) in percent	
Carbon Efficiency (carbon in products divided by carbon in natural gas feed) in percent	