Questions for Tanaka Concerning Catalyst

Support

- What is the current composition of the reticulated support? *(analyses suggest a Ni/Cr alloy)*
- What is the maximum usage temperature of the current support material?
- What is the pore size (number of pores per linear inch) for the reticulated support currently being used?
- What is the average pore diameter (μm) for the reticulated support currently being used?
- What is the unit bulk density (g/cc) for the reticulated support currently being used?
- What is the unit porosity (%) for the reticulated support currently being used?
- What are the capabilities to vary pore size, bulk density, etc., for the current support material?
- What limitations, if any, are there on pore size as well as overall size for the current support material?
- What other materials have been used to produce reticulated supports (i.e., what materials are available to us)?

Washcoat

- Is a washcoat currently being used on the reticulated support? *(analyses suggest an alumina/ceria washcoat)*
- What is the composition, including ratios, of the current washcoat?
- What is the surface area of the current washcoat?
- What is the target add-on weight of washcoat?
- What is the current loading of the washcoat on the reticulated support?
- How is the washcoat applied to the reticulated support?
- What quality control measures are in place to determine washcoat coverage?
- What limitations, if any, are there on washcoat materials?
- What effect does the washcoat have on the overall unit porosity of the current reticulated support?

Catalyst

- What are the sources for Pt and Rh (starting materials)?
- How are the catalytic materials applied to the support?
- What are the concentrations of Pt and Rh (on a molar or weight basis)?
- What are the initial drying conditions?
- What final set of conditions are used to reduce the noble metal compounds to the metal?
- What is the target add-on weight of catalyst?
- Approximately what weight percent would constitute a monolayer coverage of noble metal catalyst on the surface of the current support (minimum loading requirements)?
- What quality control measures are in place to determine catalyst (Pt and Rh) loading levels?
- What effect does the catalyst have, if any, on the overall unit porosity of the current reticulated support?
- What is working experience with other oxidation catalysts (e.g., cobalt and manganese oxides)?

Miscellaneous

- What is the current production capacity/rate of the current complete catalyst?
- What techniques are available, if any, for the screening of catalysts (i.e., generation of light-off curves)?
- Given information about PM's specific application, what recommendations can be made concerning an ideal catalyst?
- What recommendations might be made for alternative catalysts with lower thermal requirements and/or reduced cost?