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Mr. Roy Spears
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National Energy Technology Laboratory
3610 Collins Ferry Road
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Mr. Spears:

Here are my additional comments regarding the Kentucky Pioneer Integrated Gassification Combined Cycle Demonstration Project Draft Environmental Impact Statement, January 24, 2002. These comments are in addition to the ones I verbally submitted at the public hearing in Lexington.

The Draft Environmental Impact Statement gives a superficial treatment of several important issues raised by the facility's proposed siting at Trapp Kentucky. Perhaps the most important is that of the environmental fate of the heavy metals found in the enormous quantity of municipal waste that will be imported from the northeast U.S. Clearly, the draft leaves open the possibility that the "vitrified frit" will be hazardous waste: "The vitrified frit would be analyzed to determine if it is hazardous…If the hazardous constituents cannot be removed or the frit is not 100% marketable, it would be disposed of at an appropriate hazardous or solid waste disposal facility." While in the summary it is stated that hazardous wastes would be disposed at an "approved hazardous waste landfill outside of Kentucky", there is probably nothing legally binding to this statement and there can be no assurance that the operators wouldn't attempt to create such a facility in Kentucky. Our region should not be forced to assume permanent custodianship of toxics from northeastern garbage. 1/22 2/12

If the frit is not "toxic" in a legal sense, (that is, it passes the applicable leach test) but is not completely marketable, it presumably will end up in a Kentucky or regional landfill. Kentucky has made a great effort to deal with its own landfill issue. Our landfill capacity should not be consumed to enable the northeast to avoid dealing with its own solid waste problem. Market forces in that region should be allowed to encourage waste reduction, reuse, recycling, and composting. 3/12 4/22

Even if the frit "passes" the statutorily –mandated leach test on a regular basis and is sold as fill material or road aggregate, can we really be assured that leaching of heavy metals into the natural environment will not occur? I doubt it. MSW is an inconsistent and heterogeneous material. Its variability as a feedstock might very reasonably be expected to result in temporal or spatial spikes of leachability that could go undetected. In any case, there is nothing in the Draft EIS concerning the testing methods, (which tests, how large a sample, how representative of the total and how often it will be done) and who will do it. There is certainly not enough information to assume our soil and watersheds will be protected from the long-term leaching of Cadmium, Mercury, Nickel and other toxics. 2/12 (cont.) 5/16 6/21 7/05

There is no assurance that toxics won't be "cocktailed" into the RDF in a criminal way. 8/22

The claim is made in the summary (s-7) that this facility "does not actually combust any MSW " even though it is permitted by the U.S. EPA as a municipal waste combustor. under 40CFR60. To make this entirely misleading statement requires invoking one or two distortions: The first is that making fuel pellets out of the MSW means that it is no longer MSW. Removing "white goods" and aluminum does not 9/16

Comment No. 1 **Issue Code: 22**

Because of DOE's limited role in providing cost-shared funding for the proposed Kentucky Pioneer IGCC Demonstration Project, alternative sites were not considered. KPE selected the existing J.K. Smith Site because the costs would be much higher and the environmental impacts would likely be greater if an undisturbed area was chosen. DOE finds that the EIS presents the full scope of environmental impacts from the proposed project.

Comment No. 2 **Issue Code: 12**

Vitrified frit produced from the gasification process is a commercial product, not a waste. The constituents of the frit are immobilized in a glass matrix making them resistant to corrosion (nonleachable) in the environment. The vitrified frit consists primarily of ash (99.2 percent by weight) composed of oxides of the following elements: silicon (SiO_2), aluminum (Al_20_3), titanium (TiO_2), iron (Fe_20_3), calcium (CaO), magnesium (MgO), potassium (K_2O) and sodium (Na_2O). The frit also consists chloride, fluoride, antimony, arsenic, beryllium, boron, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, silver, thallium, vanadium and zinc. The frit from gasifiers operating on a 100 percent coal feed has consistently been shown to be nonhazardous under RCRA. Since this project will be using a different feed stream, the first batch of frit should be tested to ensure that it meets all TCLP criteria and is therefore nonhazardous. Vitrified frit is expected to pass the more stringent Universal Treatment Standard criteria of the EPA-TCLP analytical method. Chapter 3 of the EIS has been refined to include a more detailed description of the frit.

Since there are no hazardous waste treatment facilities in the State of Kentucky, any hazardous waste generated onsite would be managed in accordance with applicable state and RCRA's hazardous waste regulations (40 CFR Parts 260 to 270) and disposed of at an "out-of-state" licensed hazardous waste disposal facility.

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transform garbage into something else. It is still garbage and will contain the vast amalgamation of pollutants found in garbage. 9/16 (cont.)

The other distortion is that combustion is not a part of the gassification process. This claim was also made by Mike Musulin, President of KPE, in a Lexington Herald-Leader op- ed piece dated 7/23/01. Combustion certainly is a part of the chemical process, even if the over all picture is one of pyrolysis in a (mostly) oxygen-starved environment. Combustion might be defined as the highly exothermic self-sustaining reaction of a flammable material in the presence of air or oxygen. In the vicinity of the oxygen ports, at 3200degrees F, the flammable material present is certainly undergoing combustion. 10/16

The process diagram on page s-1 shows an aqueous effluent exiting the "gas liquor separator". This appears not to be re-injected into the gassifier. What pollutants will it contain? Mercury? ;Tars, oils and aromatic hydrocarbons? What treatment will it receive before it enters the Kentucky River (above the water intakes of the cities of Central Kentucky)? The Draft EIS fails to discuss this effluent, its character, or its treatment. 11/07

The Draft EIS mentions the flare used to vent the gassifiers in the event of a malfunction or emergency. Since this is a direct venting into the atmosphere, any substances that were not destroyed by the flare would escape. What would be the nature of this release? Would it produce dioxins or furans? (The flare would not have the reducing conditions present in the gassifier.) How much Mercury would be released? 12/06

In general, the Draft EIS is very lacking. It is lacking in reference to previous experience with gassification of MSW under the conditions present in this plant, either at the pilot plant or full-scale level. If the proponents of this project credibly know what the character of the effluents and by-products of this plant will be, there is no experience-based justification offered for their confidence. 1/22 (cont.) 13/16

Sincerely,

Phil Crewe

Comment No. 2 (cont.) **Issue Code: 12**
Creation of hazardous waste landfills and the disposal of northeast municipal waste in the State of Kentucky are beyond the scope of this EIS.

Comment No. 3 **Issue Code: 12**
Comment noted. At this time, no decisions have been made about disposing of the frit because KPE anticipates that the frit would be marketable. Chapter 3 of the EIS has been revised to show the importance to KPE of ensuring the frit is nonhazardous.

Comment No. 4 **Issue Code: 22**
Comment noted. The issue is beyond the scope of the EIS.

Comment No. 5 **Issue Code: 16**
Variability in the RDF content is dependent on the MSW supply. However, RDF production methods inherently yield fairly uniform and homogeneous pellets. Due to the vitreous nature of the frit, there would be no particular variability when a leaching test is conducted, regardless of the composition of the feed.

Comment No. 6 **Issue Code: 21**
The Final PSD/Title V Air Permit, issued by the Kentucky Division for Air Quality on June 7, 2001, requires continuous emissions monitors for NO_x, SO_x, CO, O_2, and PM_{10}. Annual stack tests for all pollutants with emission limits established by the permit are also required. The KPDES permit, which will be obtained at least 180 days before commencing construction, will also have effluent limits and monitoring requirements established by state regulations. In addition to the required monitoring under the permit, KPE would monitor the levels of biological and chemical oxygen demand, pH, and temperature in any wastewater generated by the facility. Any monitoring and measurements

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Comment No. 6 (cont.) **Issue Code: 21**
would be based on usage limits and flows associated with natural gas-fired plants.

Comment No. 7 **Issue Code: 05**
All raw materials and wastes would be stored and handled in enclosed areas that would not be in direct contact with local soil. Therefore, no impacts to local soil quality would be expected from operation of the plant.

Comment No. 8 **Issue Code: 22**
The Summary and Chapter 3, Section 3.2.2, of the EIS discuss RDF pellets. RDF is made from MSW, not hazardous waste, which has significantly higher levels of toxic materials. MSW is defined by EPA as durable and nondurable goods such as appliances, tires, batteries, newspapers, clothing, packaging, paper wood pellets, and food waste. While some of these goods contain toxic materials, EPA has found that household hazardous waste is comprised of less than 1 percent of MSW. The possibility of "cocktailed" toxins in RDF is unlikely based on the constituents used to generate it.

Comment No. 9 **Issue Code: 16**
Chapter 3, Section 3.2.2.2 of the EIS, discusses the production and composition of the RDF pellets. KPE intends to supply all RDF pellets for this project from the same manufacturer. Variation in RDF pellet composition due to different manufacturing processes should not be an issue for this project. The gasification technology used produces a very consistent syngas product, regardless of the variability of the feed. Chapter 3 of the EIS explains the BGL gasification process. The RDF pellet and coal cofeed is heated in a low oxygen environment, which causes a chemical conversion process that results in the formation of the syngas. The syngas product is combusted in the combined cycle turbines to produce electricity.

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Comment No. 10 **Issue Code: 16**

Chapter 3, Section 3.2.2.2, of the EIS, discusses the production and composition of the RDF pellets. KPE intends to supply all RDF pellets for this project from the same manufacturer. Variation in RDF pellet composition due to different manufacturing processes should not be an issue for this project. The gasification technology used produces a very consistent syngas product, regardless of the variability of the feed. Chapter 3 of the EIS explains the BGL gasification process. The RDF pellet and coal cofeed is heated in a low oxygen environment, which causes a chemical conversion process that results in the formation of the syngas. The syngas product is combusted in the combined cycle turbines to produce electricity.

Comment No. 11 **Issue Code: 07**

The process diagram in the Summary, Figure S-1, of the EIS, was not intended to be a detailed construction drawing, but was included to represent a general depiction of the overall process. KPE states that the specific details of the nature and degree of aqueous effluent cannot be identified until the plant design is in more advanced stages. Prior to treatment, this waste stream may include pollutants such as metals, tars, and oils. However, as stated in Section 5.8, Water Resources and Water Quality, treated wastewater is expected to contain conventional pollutants such as nitrogen, phosphorus, total dissolved solids, and biological and chemical oxygen demand. Pollutant discharge limitations would be set by the Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water's Water Resources Branch and would be identified in the KPDES permit. These limitations would be established based on site-specific computer modeling of the expected effect on water quality of the Kentucky River at the proposed discharge point and in the mixing zone immediately downgradient. The limits specified in the permit would protect existing water quality.

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Comment No. 12 **Issue Code: 06**

Emissions from the flare system, when combusting syngas during malfunction periods, would be similar to those from any gaseous fuel combustion system. Emission rates would vary somewhat from those of the gas turbines but would include essentially all the same pollutants. NO_x emissions would be lower than those from the gas turbines due to a lower combustion temperature. Sulfur dioxide emissions would be higher than those from the gas turbines since the syngas flow to the flare would not have been processed for sulfur recovery. Dioxin/furan formation would be lower than for the gas turbines due to lower combustion temperature and shorter residence time in the combustion zone. Mercury emissions would be similar to those for the gas turbines since neither system has emission controls designed to remove mercury. The air quality permit allows emission limits to be exceeded during process malfunctions for no more than 2 hours. The proposed facility is designed to allow full shutdown in well under 2 hours in the event that there is a malfunction that is not readily correctable.

Comment No. 13 **Issue Code: 16**

Plant design is not available or necessary at this point because the project is still in the planning stage. It will not be available until after the issuance of the ROD. This project would be the first commercial-scale application of the co-fed BGL technology in the United States. The technology has also been used at the Schwarze Pumpe facility in Germany and the Westfield facility in the United Kingdom.