

## Statement of Considerations

REQUEST BY PENNSYLVANIA ELECTRIC COMPANY FOR AN  
ADVANCE WAIVER OF DOMESTIC AND FOREIGN RIGHTS IN  
SUBJECT INVENTIONS MADE IN THE COURSE OF OR UNDER  
DEPARTMENT OF ENERGY COOPERATIVE AGREEMENT NUMBER  
DE-FC21-94MC31269, AS WELL AS SUBJECT INVENTIONS OF SUBCONTRACTOR  
BLACK AND VEATCH; DOE WAIVER DOCKET W(A)-94-006 [OR0-573]

Pennsylvania Electric Company (Penelec) has made a timely request for an advance waiver to worldwide rights in Subject Inventions made in the course of or under Department of Energy (DOE) Cooperative Agreement Number DE-FC21-94MC31269 and its subcontractor Black and Veatch. The work is sponsored by the Office of Fossil Energy.

On July 6, 1992, DOE solicited proposals through a Project Opportunity Notice for a fifth round of Clean Coal Technology (CCT) contracts. The CCT program's objective is to conduct cost-shared demonstration projects that significantly advance the efficiency and environmental performance of coal using technologies and that are applicable to either new or existing facilities. DOE shares not more than 50% of the cost, all of which is to be repaid from the commercialization of the technology. DOE sees its financial role as assisting private sector projects, not supporting research activities nor replicating technologies that are commercially available.

In order for the commercialization that supports the repayment to be successful, the winning proposers have an opportunity to request a waiver of Government-held patent rights which, if approved, would allow them to fully commercialize inventions that may arise during the course of the demonstration project. Penelec's proposal was successful. Commercialization and repayment plans have been submitted, and a Cooperative Agreement has been negotiated and executed. Accordingly, the waiver request has been reviewed and evaluated based on the considerations contained herein.

The scope of the work calls for the demonstration of the technical and commercial feasibility of the Hague International (Hague) externally fired combined cycle (EFCC) high pressure ceramic heat exchanger and slag screen technology for repowering electric utility generating installations. In this process the coal is burned outside the turbine and the energy transferred to the turbine through the demonstration ceramic heat exchanger, thereby preventing the introduction of corrosive and abrasive elements into the turbine. Ceramic components accommodate high firing temperatures which translate to hotter air entering the turbine for greater efficiency. The EFCC technology is suitable for converting existing coal-fueled steam plants with an expected increase in heat rate of 28.6% at Penelec's demonstration plant at Warren Station. The dollar amount of the Cooperative Agreement is about \$146,832,000 with Penelec cost sharing at least 50% of the Cooperative Agreement.

Penelec, as the Signatory to the Cooperative Agreement, is Submitting this waiver petition on behalf of itself and on behalf of and with permission of Black and Veatch, a subcontractor under the Cooperative Agreement. A letter

from Black and Veatch has been delivered to DOE, expressly stating this permission (copy attached). A subcontract between Black and Veatch and Penelec will provide for transfer of title to inventions made by Black and Veatch from Penelec to Black and Veatch. Hague, also a subcontractor, is a small business and will receive rights to Subject Inventions under the Bayh-Dole Act.

Since the owner of the technology being tested under this Cooperative Agreement is Hague and since Hague will be primarily responsible for commercialization of the technology, it is necessary for Penelec and Black and Veatch to transfer rights in any related inventions to Hague for inclusion in its commercialization package. Therefore, Penelec and Black and Veatch have submitted written assurances that they will non-exclusively license their inventions which arise within the demonstration technology on reasonable terms and conditions to Hague (copies attached).

Since Penelec, as a public utility, is restricted in the types of commitments it can make, the Repayment Agreement will be signed by Black and Veatch and Hague with the latter two committing themselves to commercialization of the EFCC technology. Penelec has submitted a commercialization plan for the novel coal diesel engine technology. It has also submitted letters of commitment from Black and Veatch and Hague stating that they placed high priority on commercialization efforts.

Penelec is the lead member of the team selected to test Hague EFCC technology. It operates the power plant, Warren Station, where the demonstration will occur. In its role it will provide access to and the use of the Warren Station facility and all existing equipment for the future design, construction and operation phases services. In addition, it will supply electric power, water, air and labor to operate the facilities during the testing and operation phases of the project. Penelec will assist in the commercialization of the technology by providing access to the Warren Station facility for tours designed to inform prospective licensees of the EFCC technology.

Hague has been a leader in the field of ceramic heat exchangers for over 20 years. Since the early 1980's Hague has had about 50 low pressure heat recovery units (recuperators) in operation that have accumulated several million hours of successful operation in corrosive and high temperature environments. During this time Hague was also developing coal-firing ceramic heat exchangers funded in part by the governments of the United States and Great Britain. DOE has been supplied with a list of about 40 locations where Hague has installed major ceramic heat exchangers since 1978. Therefore, Hague has the experience and expertise that should contribute substantially to commercialization of the inventions made under the Cooperative Agreement.

Black and Veatch is a major engineering and construction firm and has designed over 70 coal-fueled power stations. In 1991 Black and Veatch received contracts for almost 23 percent of the new power plant generation capacity worldwide. Black and Veatch's Power Division has a business practice of

monitoring new technologies and taking an active role in the engineering, demonstration, and commercialization of those technologies to positions themselves so it can participate in future markets. Its experience and expertise should contribute substantially to commercialization of the inventions made under the Cooperative Agreement.

A patent rights clause embodying waiver terms and conditions, including march-in rights, U.S. Competitiveness, retention by the government of a license and Preference for U.S. industry clauses is a part of the Cooperative Agreement to be signed by Penelec. This patent clause will be put in the subcontracts, including a paragraph that limits Penelec's and its subcontractors' ability to alienate waived rights. Specifically, they shall not transfer rights in any ownership of the Penelec or subcontractor's rights in inventions will be suspended until approval by DOE of the entity obtaining controlling interest having the waiver.

Granting of the waiver should have little effect on competition since there are several technology options, this being one of many previously or yet-to-be developed in the marketplace; therefore, there should not be undue market concentration of Penelec, Black and Veatch or Hague products.

Grant of the requested waiver should serve as encouragement to other DOE contractors that significant cost sharing will be recognized as an acceptable consideration for granting greater rights in Subject Inventions.

In view of the acceptable level of cost sharing by penelec and its subcontractors, the repayment agreement, the commitment to commercialize and the objectives and considerations set forth in 41CFR 9-9.109, all of which have been considered, it is recommended that the requested waiver for worldwide rights be granted.



Katherine Lovingood  
Senior Patent Attorney

Based on the foregoing Statement of Considerations and the representations in the attached Waiver Petition, it is determined that the interests of the United States and the general public will best be served by a waiver of U.S. and foreign patent rights, and therefore, the waiver is granted. This waiver shall not apply to a modification or extension of the cost-shared Cooperative Agreement or the subcontract with Black and Veatch where, through such a modification or extension, the purpose, scope or cost of the Cooperative Agreement or subcontract has been substantially altered.

CONCURRENCE:

APPROVAL:

\_\_\_\_\_  
George Rudins  
Deputy Assistant Secretary  
for Transportation Technologies

\_\_\_\_\_  
Paul A. Gottlieb  
Acting Assistant General Counsel  
for Technology Transfer and  
Intellectual Property

Date: \_\_\_\_\_

Date: \_\_\_\_\_

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WAIVER ACTION ABSTRACT

<u>REQUESTOR</u>	<u>CONTRACT SCOPE OF WORK</u>	<u>RATIONALE FOR DECISION</u>	<u>DISPOSITION</u>
Pennsylvania Electric Company	Demonstration of technical and commercial feasibility of externally fired combined cycle high pressure ceramic heat exchanger and slag screen technology for repowering electric utility generating installations	Fifty percent cost share, will promote U.S. competitiveness, and decrease environmental damage done by burning coal fuel	Grant waiver