

## STATEMENT OF CONSIDERATIONS

REQUEST BY REYNOLDS METALS COMPANY FOR AN ADVANCE  
WAIVER OF DOMESTIC AND FOREIGN PATENT RIGHTS UNDER DOE  
COOPERATIVE AGREEMENT NO. DE-FC07-97ID13567; W(A)-98-  
001; CH-0946

The Petitioner, Reynolds Metals Company, has requested a waiver of domestic and foreign patent rights for all subject inventions arising under the above referenced cooperative agreement and subcontracts entered thereunder. The cooperative agreement is entitled, "Wettable Ceramic Based Drained Cathode Technology for Aluminum Electrolysis Cells."

The objective of this cooperative agreement is to develop ceramic materials, technology, and necessary engineering packages to retrofit existing Hall-Heroult reduction cells to reduce the energy consumption required for making primary aluminum. The use of the ceramic material, titanium diboride ( $\text{TiB}_2$ ) in a drained cathode configuration will provide a stable, molten aluminum wetted cathode surface. By eliminating the wavy, irregular molten aluminum pool which typically serves as the cathode surface, and replacing it with a stable ceramic surface, the anode-to-cathode distance can be shortened to reduce electrical resistance. Upon completion of the project, a 70kA Hall-Heroult cell with the above drained cathode configuration will have been in continuous operation for six months with a target efficiency of 93%.

The total anticipated cost of the cooperative agreement is \$4.5 million, with the Petitioner cost sharing approximately 30% (\$1.3 million) of the cost. The period of performance of this cooperative agreement is expected to be four years. The work, as well as its cost, will be shared with two Subcontractors, Kaiser Aluminum and Advanced Refractory Technologies, Inc. (ART). Both companies have been major contributors to the development of  $\text{TiB}_2$  technology, including experimental cells and production of  $\text{TiB}_2$  powders and coatings. The waiver is contingent upon the Petitioner and its Subcontractors maintaining the above cost sharing percentages during the course of the agreement.

As set out in the attached waiver petition and addendums thereto, a waiver of patent rights of Petitioner's

Subcontractors, Kaiser Aluminum and Advanced Refractory Technologies, Inc., has also been requested. This waiver contemplates that the parties will allocate title or other rights to inventions among themselves as they deem appropriate during the course of their association consistent with the terms of this waiver. It is believed that this approach will facilitate timely commercialization of the technology by furthering the establishment of business and technical relationships between the parties and providing a mechanism for obtaining meaningful cost sharing between the parties. This waiver shall not impact the rights of those parties subject to Public Law 96-517, as amended, nor shall it grant any rights in inventions made by employees of the National Laboratories.


As noted in its waiver petition, Petitioner has been a leader in the development of  $TiB_2$  cathode technology for over 35 years and holds many patents in this field. Petitioner has made substantial investment of financial resources in this technology, including a laboratory with special furnaces for preheating  $TiB_2$  elements, stem clamps to monitor anode currents, gas burners for cathode preheat and cell startup, data collection and other such equipment. Similarly, Petitioner's Subcontractors have been major contributors in this technology with significant manufacturing capability and establish technical expertise. Currently, ART is the largest producer of  $TiB_2$  powder in the U.S. and has the capability to produce dense shape tiles and coatings. Kaiser Aluminum has had extensive experience in operating numerous experimental cells. Considering Petitioner's and its Subcontractors' technical expertise, established market position, and significant investment in this technology including sizable cost sharing in this cooperative agreement, it is reasonable to conclude that Petitioner and its subcontractors will continue to develop and ultimately commercialize the technology and products which may arise from this cooperative agreement.


Petitioner and its Subcontractors have agreed that this waiver shall be subject to the march-in and preference for U.S. industry provisions, as well as the U.S. Government license, comparable to those set out in 35 U.S.C. 202-204. Further, they have agreed to the U.S. competitiveness provisions as attached to this Statement. In brief, the Petitioner and its Subcontractors have agreed that products embodying any waived invention or produced through the use of any waived invention will be

manufactured substantially in the United States unless they can show to the satisfaction of the DOE that it is not commercially feasible to do so, and that they will not license, assign or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements.

Referring to item 10 of the waiver petition, granting this waiver is not anticipated to have any adverse impact on competition. Since the utilization technology developed under this agreement will require large investments of capital and lengthy time schedules to retrofit existing aluminum production cells, economic considerations will be as important as the technology that will result from this project. Also, there are competing systems offered by several competitors, which should prevent concentration of market share. The success of this cooperative agreement can be expected to stimulate further investment and competition in this technology.

Considering the foregoing, it is believed that granting this waiver will provide Petitioner and its Subcontractors with the necessary incentive to invest its resources in the commercialization of the results of the cooperative agreement in a fashion which will make the above technology available to the public in the shortest practicable time. Therefore, upon evaluation of the waiver petition and in view of the objectives and considerations set forth in 10 CFR Part 784, all of which have been considered, it is recommended that the requested waiver be granted.

  
Robert J. Fisher  
Deputy Chief Counsel  
Office of Intellectual  
Property Law

  
Daniel D. Park  
Patent Attorney  
Office of Intellectual  
Property Law

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

5/15/98

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


Based upon the foregoing Statement of Considerations and 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 patent rights of the scope described above, and therefore the waiver is granted. This waiver shall not apply to any modification or extension of the cooperative agreement, where through such modification or extension, the purpose, scope or cost of the cooperative agreement has been substantially altered.

CONCURRENCE:



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APPROVAL:



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Date: 6/8/98

Date: 6-11-98

(t) U. S. Competitiveness

The Contractor agrees that any products embodying any waived invention or produced through the use of any waived invention will be manufactured substantially in the United States unless the Contractor can show to the satisfaction of the DOE that it is not commercially feasible to do so. In the event the DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in some appropriate manner, e.g., recoupment of the Government's investment, etc. The Contractor agrees that it will not license, assign or otherwise transfer any waived invention to any entity unless that entity agrees to these same requirements. Should the Contractor or other such entity receiving rights in the invention undergo a change in ownership amounting to a controlling interest, then the waiver, assignment, license, or other transfer of rights in the waived invention is suspended until approved in writing by the DOE.