

STATEMENT OF CONSIDERATIONS

ADVANCE WAIVER OF THE GOVERNMENT'S U.S. AND FOREIGN
PATENT RIGHTS AND ADVANCE APPROVAL TO ASSERT COPYRIGHT
UNDER SUBCONTACT B555909 ISSUED BY LAWRENCE LIVERMORE
NATIONAL LABORATORY TO INTERNATIONAL BUSINESS MACHINES
CORPORATION FOR THE COLONY PROJECT UNDER DOE'S
ADVANCED SIMULATION AND COMPUTING PROGRAM WAIVER NO.
W(A) 06-028

Background: The Petitioner, International Business Machines Corporation (IBM), has requested an Advance Waiver of the Government's Intellectual Property Rights in the above-cited Lawrence Livermore National Laboratory (LLNL) research and development subcontract for the Colony Project of the DOE's Advanced Simulation And Computing (ASC) Program.

The ASC Program's objective is to identify inadequacies in today's high-end computing systems and to promote R&D efforts exploring alternative high performance computing architectures that will address the ASC Program's complex applications. The Blue Gene/L Project was the first initiated under the ASC Advanced Architecture Project. The Blue Gene/P Project is for the development of a second generation system which builds on the first generation Blue Gene/L design based on several proprietary IBM hardware and software technologies. Advance waivers have been granted for each Blue Gene subcontract: W(A) 01-018 for the initial Blue Gene/L research and development project, W(A) 04-053 for the Blue Gene/P Phase I (Design Architecture Study), W(A) 05-014 for the Blue Gene/P Phase II (Design and Fabrication) and W(A) 05-048 for the Blue Gene/P Phase III (Prototype Hardware Buildout). The Blue Gene/L and Blue Gene/P Phases I and II have been successfully completed. Blue Gene/P Phase III is scheduled to run through 2007. The subcontracts for the Blue Gene/L and Blue Gene/P Projects are with IBM's Research and Development Division and are anticipated to total more than \$53M with a 60/40 DOE/IBM cost sharing.

Under the Colony Project, a team of collaborators from the University of Illinois at Urban-Champaign, LLNL, and Subcontractor IBM Engineering and Technology Services (E&TS) are researching and developing system software to enable general purpose operating and runtime systems for tens of thousands of processors. The system software developed under the Colony Project will relieve the application programmer of key system software scaling issues without sacrificing useful functionality found in general purpose operating systems. The purpose of this project is to demonstrate the feasibility (or infeasibility) of this concept.

The ability to run open-source Linux in the compute nodes will both increase the spectrum of applications that can run on a Blue Gene machine, and enable a large scale test bed for the Colony Project. Under the current Subcontract B555909, IBM will develop a port of non-symmetric multiprocessors (non-SMP Linux) for the Blue Gene compute nodes and the associated support software to create partitions of the machine which run Linux in their compute modes. It is expected that the intellectual property developed in the course of this subcontract will be derivative of existing open-source software or derivative of proprietary IBM software. The open-source software and the intellectual property rights therein will be subject to the

restrictions on asserting proprietary rights found in the applicable open-source software license (i.e., any derivative object code and source code must be freely distributable as open source software and any Linux-related patents must be essentially dedicated to the public). Regarding intellectual property rights developed related to existing IBM intellectual property, as in previous subcontracts under various aspects of the ASC Blue Gene program, IBM has expressed its reluctance to accept a subcontract award if a waiver of intellectual property rights is not granted.

The current Subcontract B555909 for the Colony Project is for \$360K and, as stated earlier, is with IBM Engineering and Technical Services (E&TS), a commercial division of IBM. There is no specifically identified cost sharing; however, the cost identified by IBM in its proposal is indicative of a substantial discount from IBM's normal charges and is consistent with the cost sharing in other Blue Gene subcontracts. E&TS is a commercial division that has not previously worked on Government research and development contracts - in contrast to the Research and Development Division that performed the earlier Blue Gene subcontracts.

IBM is the only subcontractor that can reasonably accomplish this work since the Linux software will be interfaced with IBM proprietary technology. The work will be performed at the IBM's facilities located at Rochester, Minnesota, Yorktown Heights, New York, LLNL and at other locations approved by LLNL.

Scope of the Waiver: IBM has agreed to accept the same scope as in the previous waivers under the ASC Program - W(A) 05-048 (BG/P III), W(A) 05-014 (BG/ P II), W(A)-04-053 (B/G P I) and W(A)-01-018 (BG/L). Briefly, the Petitioner will be able to retain the patent rights to its sole or joint (undivided) subject inventions in accordance with the terms and conditions set forth at 48 CFR 52.227-12 as amended by 10 CFR 784.12. DOE will retain a royalty-free, non-transferable, irrevocable, nonexclusive license to practice any subject invention by or on behalf of the U.S. Government anywhere in the world as well as march-in rights and a preference for United States Industry provision comparable to those set forth in 35 U.S.C. 202 and 204. IBM will conduct R&D activities under this subcontract principally (level of effort >90%) in U.S.-based facilities, and for a period of one year after the subcontract completion, subsequent R&D on subject technologies substantially (level of effort >50%) in U.S.-based facilities. The agreed upon U.S. Competitiveness provision is made applicable to this subcontract. (See Enclosure.)

IBM is granted prior approval to establish copyright subsisting in all published and non-published data. DOE will retain a paid-up, nonexclusive, irrevocable worldwide license on behalf of the U.S. government in such copyrighted data to reproduce and prepare derivative works, and perform by or on behalf of the Government. In the case of computer software, after five (5) years from the date of production, this license will expand to include the right to distribute copies to the public, and perform publicly, and display publicly, by or on behalf of the Government.

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Conclusion: Given the past progress of the ASC program with the present parties under the BlueGene/P Phase I and Phase II and Phase III subcontracts and the applicability of the previously negotiated terms and conditions to this stage of research and development, it is desirable to conduct the proposed Colony Project effort under the same terms and conditions.

Accordingly, in view of the statutory purposes of DOE waiver policy, and the objectives of the Accelerated Strategic Computing program, and in view of the factors to be considered under DOE's statutory patent waiver policy, all of which have been considered, it is determined that this advance waiver will best serve the interest of the United States and the general public. It is therefore recommended that this waiver be granted.



William Daubenspeck
Office of Counsel
NNSA Service Center

Date: NOVEMBER 30, 2006

Based on the foregoing Statement of Considerations, it is determined that the interests of the United States and the general public will best be served by waiver of the United States' domestic and foreign patent rights, copyright in software and a delay in the release of technical data as set forth herein, and therefore, the waiver is granted. This waiver shall not apply to a modification or extension of the IBM subcontract where, through such modification or extension, the purpose, scope or DOE cost of the subcontract has been substantially altered. This waiver shall not affect any waiver previously granted.


CONCURRENCE:



Dimitri Kusnezov
Director of Office of Advanced Simulation
And Computing (NA-114)

Date: 12/7/06

APPROVED:



Paul Gottlieb
Assistant General Counsel
for Technology Transfer and
Intellectual Property (GC-62)

Date: 12/12/06

**Enclosure
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U.S. Competitiveness –Colony Project

The Subcontractor agrees to conduct research and development activities under this Subcontract in U.S.-based facilities. This U.S. Competitiveness Provision is only for this phase of the Colony Project. There is no commitment for additional research activities by either party and it is understood between the DOE and the Subcontractor that any subsequent follow-on subcontracts and/or future phases of work under the Government's Colony Project will be subject to a separate U.S. Competitiveness determination.