STATEMENT OF CONSIDERATIONS

STATEMENT OF CONSIDERATIONS FOR LIMITATION OF THE GOVERNMENT'S RIGHTS IN DATA WITH RESPECT TO COMPUTER SOFTWARE CREATED JOINTLY BY DOE MANAGEMENT AND OPERATING CONTRACTORS AND IBM UNDER ORNL SUBCONTRACT NO. 86X-SU333V FOR THE DEVELOPMENT OF THE HIGH PERFORMANCE STORAGE SYSTEM

Department of Energy (DOE) contractors cannot copyright computer software first produced with government funds without the written approval of DOE. If approval to copyright software is granted, the government normally obtains for itself and others acting in its behalf, a paid-up nonexclusive, irrevocable worldwide license in such copyrighted computer software to reproduce, prepare derivative works, and perform publicly and display publicly by or on behalf of the Government, i.e. any government facility and any government contractor normally has free access to any computer software developed with government funds for use in governmental activities.

The Government has the power to accept a lesser license right in first produced computer software including limiting the scope of the government license to certain facilities per 48 CFR Part 27.404 (f)(1)(iv) and (g)(3). This Statement of Considerations provides justification and approval for the copyrighting of a computer software program entitled the High Performance Storage System (HPSS), and for a lesser retained government license in HPSS as described below under the heading: The Proposed Allocation of Rights in HPSS. Because the lesser license represents a significant departure from any lesser license previously accepted by DOE and because of the variety of DOE programs potentially affected by the proposed lesser license, high level approval by the programs most likely affected is requested.

Background

The DOE Management and Operating (M&O) Contractors, the Regents of the University of California at Lawrence Livermore National Laboratory (LLNL), at Los Alamos National Laboratory (LANL), and at Lawrence Berkeley National Laboratory (LBNL); the Lockheed Martin Energy Research Corporation at Oak Ridge National Laboratory (ORNL); and the Sandia Corporation at Sandia National Laboratory (SNL) (collectively referred to as the "Development Laboratories"), have been and are continuing to work on HPSS. IBM Corporation (IBM), with technical assistance from

LLNL, LANL, ORNL and SNL, conceived, developed and delivered to the Development Laboratories an initial version of HPSS and together with the Development Laboratories (which includes LBNL after the transfer of the National Energy Research Scientific Computing Center (NERSC) to LBNL) has continued to further develop and support their common strategic direction to deploy HPSS at computing centers for operational use in high performance computing environments. The ultimate goal is the continued viability of this hierarchical storage management (HSM) system so that Development Laboratories, other DOE laboratories and in some cases, vendors, can meet critical DOE mission requirements.

Prior to the development of HPSS, DOE laboratories, primarily LLNL, developed an HSM system that became "Unitree" after it was licensed to industry. It has been represented by the Development Laboratories that the unrestricted distribution policy of Unitree led to the development of multiple versions resulting in a divergence of ownership that resulted in a lack of uniform management and control of Unitree. This lack of control ultimately led to an unreliable and inconsistent product corrupted by third party updates incorporated into some versions of Unitree. Although the licensing and commercialization of Unitree was a success, the Unitree distribution and commercialization model is considered a failure for the DOE mission related use of the software. Unitree was not scalable or powerful enough to move an adequate amount of data. The DOE mission need for a reliable, high performance HSM system led the Development Laboratories and IBM to create HPSS.

HPSS is a very large and complex HSM system designed for high performance computing (HPC) environments having requirements for scaling storage to many petabytes and input/output rates to gigabytes per second. The HPC marketplace is a small niche market in the computing industry; and HPSS is a niche product within the HSM marketplace. It is conceivable that the HSM marketplace has market growth potential. National security organizations within DOE, such as Defense Programs (DP), concerned about the viability of products within the HPC marketplace (and in some cases vendors) that can meet critical DOE mission requirements, have invested significant resources in critical technologies, like HSM software. These resources have been in the form of DP Technology Transfer Initiative Program funding, and later, direct funding by the Energy Research Program and by DP under the Accelerated Strategic Computing Initiative (ASCI) Program. The Energy Research Program effort initially focused on providing archival storage for high performance computing facilities such as NERSC and has expanded to include nuclear, global climate, and high energy physics applications. Recognizing the importance of HPSS in providing capabilities critical to their HPC-related missions and not available in the commercial HSM marketplace, DOE programs and other

agencies have supported HPSS.

Prior Collaboration with IBM

Over a period from 1992 to1995, four founding laboratories (LLNL, LANL, SNL and ORNL) each entered into separate Cooperative Research and Development Agreement (CRADA) projects with IBM. These CRADA projects, called the National Storage Laboratory Collaboration, focused on demonstrating proof of several high performance HSM concepts. LANL had also worked on high performance storage concepts under DOE funding. Once the four founding laboratories and IBM proved the concepts, such as the network attached storage as required by a large complex, scalable HSM system, they together began working on HPSS. The development of HPSS continued after the end of the CRADA projects supported in part under separate DOE funding and in part by separate IBM funding. LBNL also joined the development and support effort after the move of NERSC to LBNL. In 1995, ORNL issued a subcontract, on behalf of the Development Laboratories, to IBM that provided IBM with Government funding to continue the effort. The Government rights in HPSS are in question because IBM and the Laboratories kept working on the effort to develop HPSS, initially, without any formal agreement as to ownership in data rights, and later, under a subcontract with inadequate data right provisions. Also, IBM acting in good faith reliance upon the terms of the Oak Ridge subcontract has provided privately developed HPSS updates to the Development Laboratories which are asserted to be proprietary by IBM and which have become incorporated into the source code maintained at each of the Development Laboratories. Rights of the Government in these privately developed updates of HPSS are in question.

ORNL, as the lead contracting laboratory of the present multi-laboratory effort, is continuing this collaborative effort between the Development Laboratories and IBM under the present Subcontract No. 86X-SU333V. In addition to the Development Laboratories, HPSS has been deployed at NASA (Langley), NSF (San Diego Supercomputing Center), the University of Washington, the Stanford Linear Accelerator, Fermilab and several other sites. It will shortly be deployed at Brookhaven National Laboratory. These deployments are by an agreement between the site and IBM and involve the payment of funds by the site to IBM.

Continuing Partnership with IBM

The development and support of a large HPC system, such as HPSS, is very expensive. IBM has contributed a combined amount of approximately $8.5 million as its in-kind CRADA contributions towards the four founding laboratory CRADA projects. DOE contributed approximately $8 million towards these same CRADAs.

IBM continued funding the effort with an additional $2-4 million after the CRADAs ended. The first DOE subcontract issued by ORNL provided Government funding of approximately $2 million over the past two years, while the latest modification to that subcontract is anticipated to provide an approximate additional $1 million per year during the next several years.

HPSS has limited commercial application outside of the Government. It is important to the Government that one version of HPSS be supported and available. IBM has unique expertise as a co-developer of HPSS and has assembled a highly skilled and dedicated team to the HPSS effort. In addition to DOE's own programmatic need for HPSS, DOE believes that it is important to maintain a viable IBM HPSS support organization in order to ensure that HPSS continues to be adopted and supported by other organizations. This will ensure the continued viability of HPSS as a reliable and useful product. Further, because of the limited commercial application of HPSS, we believe that IBM will be unwilling and unable to retain an HPSS support organization without Government support. It will cost several million dollars a year to keep a critical mass support team together. It is also unlikely that current organizations would have chosen or that future organizations will choose HPSS without assurance of IBM support. Such organizations are unlikely to entrust petabytes of data without a belief that their choice of HSM will have a long life with adequate support. IBM's involvement adds additional important credibility to HPSS.

Further, it is vital to the reliability, serviceability, availability and extensibility of HPSS that the development team work with a single source code version of HPSS and that this is the version used by all sites in production. The complexity and relative immaturity of HPSS necessitates both control over the source code and assurance that modifications and improvements be performed with consistent software engineering practices. Hereby, the Development Laboratories and IBM will jointly receive the right to assert copyright over their past and future collaborative modifications and improvements to HPSS. The Development Laboratories and industry have had negative experiences with sporadic code developed by competing vendors in complex products. It is feared that the code of HPSS will diverge if this joint development effort with IBM is discontinued. A single vendor with the prime commercialization responsibility (including deployment to other government contractors) that is a part of the HPSS development and support team will help ensure the sustainability of a consistent process for incorporating derivative work. DOE and the Development Laboratories desire strong source code control through a cognizant commercial partner. The DOE laboratories also need an agreement that will ensure the availability of all derivative works.

Finally, the likelihood of success is low for any Government agency to support HPSS

without significant IBM and DOE laboratory support. DOE's Development Laboratories cannot provide adequate support alone because such an activity cannot be carried out without seriously affecting DOE programmatic work. It is not economically viable either for the Government to hire a third-party vendor to come up to speed on HPSS to support the effort (which would take considerable time) or for a commercial partner to try to join the effort in a reasonable time and investment to reach IBM's HPSS capabilities. Even if another entity could be found, it is probable that any replacement entity would lack the ability to provide appropriate support in reasonable time at less cost than IBM can provide with its HPSS background and experience. The previous partnership and contributions by IBM toward the development of HPSS should also be given consideration. Any lack of appropriate support would seriously damage HPSS's reputation and damage the viability of the HPSS effort.

If the relationship with IBM is not continued through approval of this statement of considerations, the Software Agreement between IBM and the Development Laboratories will terminate in six months. At that time, the Development Laboratories will have to remove IBM proprietary code resulting in a non-functional version of HPSS remaining at the Development Laboratories.

The ORNL Subcontract

ORNL is acting as lead contracting laboratory in coordination of this multi-laboratory effort related to HPSS. Under the present ORNL subcontract and related Software Agreement, IBM will continue to collaborate with the Development Laboratories on the development and support of HPSS. IBM will be the sole source for HPSS during the term of the ORNL subcontract including to other government contractors. A sole source justification was prepared by ORNL for the subcontract with IBM. The rights of the government in the computer software produced under the ORNL subcontract will be consistent with the allocation of rights set forth below. It is not to be considered a precedent that the most current versions of HPSS will not be deposited at ESTSC for distribution. Had the Government been advised in a timely manner of the informal continuation of the relationship between the Development Laboratories and IBM on HPSS, the Government might have required a different arrangement than the one now contemplated. The present choice to formalize the relationship with IBM appears to be the best available course in light of all of the circumstances, including past HSM commercialization experience, and HPSS goals.

The Proposed Allocation of Rights in HPSS

In accordance with the M&O Contracts "Rights in Data" clauses, and FAR 52.227-

14 normally applicable to IBM under the ORNL subcontract, the M&O Contractors and IBM may only assert copyright in computer software with the DOE Contracting Officer's prior approval. Therefore, DOE agrees, in advance to authorize IBM and the Development Laboratories to assert copyright, without the Contracting Officer's prior approval, in the HPSS computer software and associated documentation produced by their own employees under ORNL Subcontract No. 86X-SU333V, the Software Agreement and the Development Laboratories' M&O Contracts, respectively, so that IBM and the Development Laboratories can jointly assert copyright over the HPSS computer software.

The Development Laboratories shall be able to use and have access to the most current versions of HPSS source and object code including any enhancements developed by or for other licensees of IBM and will not be required to pay for maintenance and support services from IBM. Any other laboratories, including other DOE laboratories, will be required to pay for a software maintenance and support services agreement from IBM to obtain HPSS. Other government facilities including other DOE laboratories will not have the normal free access to software developed with government funds. The fees from such agreements will support IBM's team dedicated to the HPSS effort. IBM will provide the software and associated services at reasonable prices as reflected by the costs to support HPSS. DOE agrees that government rights in HPSS will be restricted during the period of the Software Agreement.

For a period of X years from the termination date of the formal Software Agreement, where X equals either five years if there are no longer at least three DOE laboratories (including any new laboratory signatories) or is one year if IBM terminates or violates the Software Agreement, the Development Laboratories have agreed to utilize HPSS for internal purposes only (including the ability to make derivative works) and not to make HPSS available to others. This period of exclusivity is contingent upon (1) IBM engaging in adequate commercialization efforts, defined as devoting at least five full time equivalents in the United States to the effort during the course of the Software Agreement, and (2) at termination of the Software Agreement, and again, at the end of the period of exclusivity, IBM ensuring that the most current source and object code versions of HPSS with documentation are delivered to the Development Laboratories. The version of HPSS delivered at the end of the period of exclusivity may include proprietary data, appropriately marked, added by IBM during the period from the end of the Software Agreement to the end of the period of exclusivity. At the end of the period of exclusivity, the government restrictions in HPSS, as HPSS existed at the termination date of the Software Agreement, will convert to a broad Government license, which allows the Government to exercise additional rights to have the Development Laboratories make and distribute copies to the public, perform

publicly, display publicly and make derivative works. These actions will enable IBM to be the sole distribution and commercializing entity of HPSS, including its subsequent enhancements and derivative works for the period of exclusivity. At the end of the exclusive period, IBM and the Laboratories may also negotiate a cross license to the enhancements and derivative works developed after the termination of the Software Agreement.

Trademarks and Deliverables

In addition, DOE agrees to permit IBM to register and hold all right title and interest in any trademark related to HPSS, subject to a license on behalf of the U.S. Government.

Under the present ORNL Subcontract No. 86X-SU333V, current versions of the HPSS computer software will be delivered to the Development Laboratories under the subject ORNL subcontract. The expected activities and deliverables will be: (1) delivery of current source and object code versions of HPSS to the Development Laboratories by IBM; 2) continued development and support of HPSS by IBM; and, (3) delivery of an earlier object code version of HPSS at the Energy Science and Technology Software Center by IBM.

Conclusion

IBM's former and continuing technical and private financial contribution to development and support in conjunction with the Development Laboratories' joint efforts resulted in the creation of HPSS, a system that is needed to satisfy DOE programmatic missions. From a programmatic viewpoint, it would not be feasible to attempt to replace IBM, as no other commercial entity is capable of replacing IBM in developing and supporting HPSS. It would be unjust to try to replace IBM in light of its significant financial and technical contribution to date towards the development and support of HPSS.

In view of the present circumstances, DOE believes that granting permission to assert copyright in the computer software to IBM and the Development Laboratories is warranted here in order to continue the viability of HPSS as a reliable and useful product through the development and support of a single source code version.

This Statement of Considerations and the terms of the intellectual property clauses included within the subject subcontracts are meant to cover the scope of the work under ORNL Subcontract No. 86X-SU333V and shall not serve as precedent for follow-on or any other work to be negotiated separately with any entity in the future.

For the foregoing reasons, and in view of the objectives and considerations set forth in 48 CFR Part 27.404, all of which have been considered, it is recommended that the Government accept the above recited rights in data, which meets the above requirements.

[redacted]

Date: 7-1-98

Robert Padilla
Counsel for Intellectual Property
DOE, Oakland Operations Office, CA

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 the Government accepting lesser rights in data (copyright) with respect to computer software/trademark as set forth herein, and therefore, the Government is accepting such lesser rights in data. This Statement of Considerations shall not apply to a modification or extension of the subcontract where, through such modification or extension, the purpose, scope or DOE cost of the subcontract has been substantially altered. This Statement of Considerations shall not affect any statement of considerations/waiver previously issued or granted.

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