

July 15, 2004

MEMORANDUM TO: Jacqueline E. Silber  
Chief Information Officer

FROM: Carl Paperiello, Director */RA/*  
Office of Nuclear Regulatory Research

SUBJECT: REQUEST FOR PERMISSION TO LOCATE A NEW RACK OF RES  
HIGH PERFORMANCE COMPUTING EQUIPMENT IN THE 5<sup>TH</sup>  
FLOOR DATA CENTER

The Office of Nuclear Regulatory Research (RES) is requesting approval to locate a new rack of high performance computing equipment into the TWFN 5<sup>th</sup> floor data center prior to full accreditation of the entire high performance computing system. The equipment is tagged and ready for delivery from the warehouse. This request has been coordinated with Kathy Lyons-Burke and John Badrian of your staff.

The equipment has significant power and air conditioning requirements and was purchased with the understanding that it would be operated in the 5<sup>th</sup> floor data center. The equipment would not be connected to NRC's operational network until such time as full accreditation is achieved. The majority of equipment monitoring and maintenance will be accomplished remotely via a dedicated connection between the 10<sup>th</sup> and 5<sup>th</sup> floor. A suitable location in the Data Center has been identified and a dedicated network cable has been installed to the 10<sup>th</sup> floor. All user accounts and data will remain on a server located on the 10<sup>th</sup> floor (T10-C22). More detailed information about the equipment and its use is provided in the attachment.

RES is requesting a temporary exception to the OCIO policy so that the equipment can be allowed to operate in the data center while awaiting the completion of the accreditation process. The accreditation process is expected to be completed in August. Therefore, an exception lasting until September is needed.

Thank you for your consideration of this request. Questions regarding this matter should be directed to Chris Boyd at 415-0244.

Attachment: As stated

Approved: \_\_\_\_\_ */S/* \_\_\_\_\_ 7/20/2004  
Jacqueline E. Silber Date  
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## Background Information on New HPCS Equipment

In order to meet the increased demand for computational fluid dynamics (CFD) predictions this fiscal year, RES ordered this additional hardware and associated software licenses. Prior to ordering the hardware, RES was denied its request for additional power for HPCS equipment in the 10<sup>th</sup> floor computer room (T10-C22). Rather, RES was offered space in the 5<sup>th</sup> floor data center where adequate air conditioning and power are available. RES and OCIO staff met early in this process and agreed upon space and power requirements for the 5<sup>th</sup> floor. RES proceeded to order a high density rack configuration without needed power backup capacity since adequate conditioned power and air conditioning are available on the 5<sup>th</sup> floor. After the equipment was ordered, RES was informed that HPCS equipment could not be moved into the 5<sup>th</sup> floor data center until high performance computing system (HPCS) is fully accredited.

Currently, no RES HPCS equipment is being allowed into the data center until HPCS has achieved full accreditation. However, no suitable space for this new equipment is available outside of the 5<sup>th</sup> floor data center. The initial HPCS assessment completed by the NRC's system security contractor, ARTEL, as part of the accreditation process found no negative security issues with this equipment being operated in the data center. Rather, the 5<sup>th</sup> floor location promotes operational benefits related to climate control and physical protection. All other RES HPCS equipment will remain on the 10<sup>th</sup> floor until HPCS is fully accredited.

The new RES equipment consists of 7 blade servers mounted in a single rack. These servers will significantly add to the computational resources available to RES. This equipment cost \$53,000 to purchase and RES purchased additional software licences valued at \$87,000.

The new equipment will be used to significantly augment (a 65% increase) the RES computational capacity for CFD predictions. Currently, RES does not have the computational resources to apply CFD to all of the technical issues that need to be addressed. Resources are needed now to support the agency steam generator action plan, the RES plan to study BWR dryer cracking issues, and a user need request for dry cask storage container heat up analysis. Delays in setting up this equipment will delay safety analysis in these areas.