

April 23, 2002

MEMORANDUM TO: Michael L. Springer, Director  
Office of Administration

FROM: Stuart Reiter **/RA/**  
Chief Information Officer

SUBJECT: UNINTERRUPTABLE POWER FOR NRC DATA CENTERS

On March 18, 2002, you provided us with the latest in a series of memoranda exchanged between our offices on the subject of uninterruptable power for the NRC Data Centers. We have reviewed your memorandum and agree with your plans for resolving the remaining issues.

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## **UPS Question and Answers**

**1. Is this response [from Michael Springer dated March 18] satisfactory?**

Yes, the response is satisfactory.

**2. What are our resultant service levels to customers?**

Once UPS upgrades have been completed, we expect essentially no downtime of systems located in the Data Center due to power transients and short-term power outages.

**3. What is protected by uninterruptable power?**

Major infrastructure components, such as ADAMS and STARFIRE, are protected by uninterruptable power. All components in the Data Center will be protected once UPS upgrades are completed. Components elsewhere, such as desktop workstations, are not protected.

**4. Does this mean ADAMS will remain operating but my workstation may loose power?**

Yes. However, the workstation should reboot automatically when power is restored. The network connection can then be re-established.

**5. What about long-term power outages?**

There are no provisions for long-term (e.g., one hour) power outages. Diesel generators provide only building emergency and NRC Operations Center power. Outages of several hours would initiate contingency and disaster recovery plans, in which functions are moved off-site.

**6. What is the issue concerning the word “never” in Michael Springer’s memorandum?**

In a December 13, 2001, memorandum, OCIO stated “properly-protected facilities should never be subject to power transients and short-term power outages.” ADM took issue with use of the word “never” as being overly stringent. A better choice of word would have resulted in “properly-protected facilities should not be subject to power transients and short-term power outages.

**7. Does ADM expect a UPS failure?**

No, ADM does not expect a UPS failure. However, ADM does not believe it is in a position to guarantee perfect UPS performance.

**8. What UPS performance expectations does OCIO have?**

If the UPS units are properly monitored and maintained, OCIO expects essentially no downtime of Data Center systems due to power transients and short-term power outages.

**9. Is it difficult to maintain a UPS unit?**

No. It is not difficult to maintain a UPS unit. The unit can be taken off-line, without disturbing the output power flow, while maintenance is performed.

**10. Is it difficult to monitor a UPS unit?**

Monitoring a UPS unit (and establishing its ability to perform under demand) is a difficult task. In an October 2001 memorandum, OCIO indicated a UPS unit in OWFN had been damaged due to a power transient and this degraded condition went undetected for a long period of time (the unit is located in an inaccessible area). In response, ADM repaired the unit and pledged to provide remote monitoring capability.

**11. What is the “misunderstanding” referred to in Michael Springer’s memorandum?**

During early discussions regarding UPS, ADM stated it had been told that not all devices in the NRC Data Centers required uninterruptable power. This misunderstanding has been corrected. Availability of uninterruptable power is regarded as a major benefit of locating equipment in the Data Center.

**12. Has ADM responded to this “misunderstanding”?**

Yes, ADM has sized the planned replacement UPS to provide for the entire TWFN Data Center.

**13. What about “redundant systems” in Michael Springer’s memorandum?**

During early discussions regarding UPS, ADM proposed doubly or triply-redundant UPS systems to meet OICO expectations. We do not regard this approach as cost-effective and stated so in our December 2002 memorandum to ADM.

**14. Would redundant systems improve service levels?**

No. Our experience has shown that risks from failure of a properly monitored and maintained single UPS is relatively small compared to other risks. As an example of other risks, power transient problems in the TWFN Data Center were traced to a manually bypassed UPS unit. This was a result of human failure (the misunderstanding in Question 11 above) rather than system failure, and would not have been prevented by redundant systems.

**15. Are there any remaining concerns?**

OCIO must be very careful in making the transition to the new UPS system being provided by ADM. Power must be interrupted for a brief period of time to make this transition, and it must be carefully planned and executed.