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**DABR, DABSNM**  
*Director, RSO*

**Radiation Safety**

June 20, 2005

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To: **Randolph Ragland, Ph.D, CHP**  
**Senior Health Physicist**  
**Nuclear Regulatory Commission**  
**Division of Nuclear Materials Safety**

From: **Shashadhar Mohapatra, Ph.D**  
**Radiation Safety Officer**  
**Washington Hospital Center**

Ref: Conference call on Wednesday, June 15, 2005

Dear Randy:

Attached please find Dr. Rosanna Chan's response to the questions that were asked by the Medical expert at your NRC headquarters during the conference call on Wednesday, June 15, 2005. Dr. Chan is our Chief Medical Physicist at the Washington Hospital Center. Please feel free to contact me at 202-877-2906 or Dr. Chan at 202-877-3950 if you have any additional questions.

Thanks for your patience.

**NMSS/RGNI MATERIALS-004**

**RESPONSE TO THE NRC REGARDING THE QUESTIONS ASKED TO DR.  
ROSANNA CHAN DURING THE CONFERENCE CALL ON WEDNESDAY,  
JUNE 15, 2005**

- 1) What was the dose to the unintended area if treatment were delivered as planned?**

If dose were delivered as planned, the area 6 mm away from the target area would have received a dose about 10% of the prescribed dose, which is about 2.6 Gy (Prescribed dose is 13 Gy at the 50% isodose line).

Like all 3-D conformal treatment plan, this Gamma Knife plan was prescribed to an isodose line based on the dose volume histogram (DVH), which is a summation of all the individual shots. Though the unintended shift of 6mm is not ideal for this plan, it does not post a detrimental effect on the overall isodose distribution. Without the last shot, DVH coverage would be reduced from 95% (595.7 mm<sup>3</sup>) to 91% (572.5 mm<sup>3</sup>), 4% less than intended. In reality the DVH would be somewhat in between so the isodose lines would be somewhat elongated. Based on the location, our estimation is that the final shot was inside the auditory canal within the proximity of the intended treatment area and there should not be any harmful effect to the patient.

- 2) Was the patient informed of the incident?**

Dr. Jacobson, the Neurosurgeon & Dr. White, the Radiation Oncologist both talked to the patient right after the incident. Patient was told that there was no clinical significance with the last shot not being on target. Patient will be followed like any other regular radiation patient. A written description of the event is in the patient's chart and can be obtained upon request.

- 3) Was the referring physician notified?**

Dr. Jacobson did notify Dr. Dennis Fitzgerald, the referring physician personally regarding the event.