

## Event Detail - Abnormal Occurrence

ITEM #: 080337 AO #: 08-05 AO REPORT: NUREG-0090, Vol. 31  
TITLE: Medical Event at Bon Secours Virginia Health Source in Midlothian, Virginia  
NAME: Bon Secours Virginia Health Source  
DATE: 05/01/2008 CITY: Midlothian STATE: VA

### Criteria:

Criteria III.C.1.b and III.C.2.b(iii), "For Medical Licensees," of Appendix A to this report provide in part that a medical event that results in a dose that is equal to or greater than 10 Gy (1,000 rad) to any organ or tissue (other than a major portion of the bone marrow, or the lens of the eye, or the gonads) and represents a prescribed dose or dosage that is delivered to the wrong treatment site shall be considered for reporting as an AO.

### Nature and Probable Consequences:

Bon Secours Virginia Health Source reported that a medical event occurred during a high dose-rate (HDR) treatment for breast cancer using an iridium-192 source with an activity of 165.4 GBq (4.47 Ci). The authorized user physician prescribed 10 fractions of 340 cGy (340 rad) each to be administered using a balloon catheter technique. The licensee calculated that a portion of the target volume received a dose in the range of 86 cGy (86 rad). In addition, a small volume of skin, at the catheter entrance into the patient, received a dose in the range of 1,142 cGy (1,142 rad). The patient and the referring physician were informed of this event.

During the check source run for the first fraction, an HDR alarm interrupted the run. Rather than investigate the cause of the alarm, the physicist concluded that a 2 mm error had been made in the measurement of the catheter length and the alarm occurred because the check source hit the end of the catheter. The physicist adjusted the catheter length value at the treatment console from 1300 mm to 1280 mm, believing this to be a change of 2 mm, and the treatment was administered. Immediately following the first treatment, it was determined that the original catheter length measurement of 1300 mm was correct and the length change made at the treatment console was 20 mm rather than 2 mm. As a result, the source dwell positions were 20 mm from the intended locations and were closer than intended to the skin entry point of the HDR catheter.

Subsequent HDR treatment fractions were administered as intended, with adjustments to the final two treatment fractions to assure that all areas of the target volume received an adequate dose over the course of the treatment. An NRC medical consultant concluded that no significant adverse health effect to the patient is expected.

### Cause:

The cause of the medical event was human error in (1) failing to investigate the cause of the HDR alarm and (2) adjusting the catheter length value at the console by 20 mm instead of the intended 2 mm.

### Licensee Action:

The licensee's corrective actions taken to prevent recurrence included updating procedures to define steps that will be taken to resolve HDR device alarms.

### NRC Action:

NRC performed a reactive inspection at the facility and issued a Notice of Violation for three violations of regulatory requirements on October 10, 2008.

### Other Agency Action: