



MHG SERVICES

P. 8

DATE: 11-1-05 FROM: BILL JOHNSTON
 TO: JUDY
 COMPANY: NRC
 FAX NO.: 610-337-5269
 NO. OF PAGES INCLUDING THIS ONE: 3
 If you do not receive all pages, please call 610-497-0400

12-16559-02
630 35 114 / 2005 004

NMSS/RGNI MATERIALC-004

5 Nealy Boulevard, Trainer, PA 19061 • Phone: (610) 497-0400 • Fax: (610) 497-0724 • Toll Free: (888) 972-9633

Regional Hqts: • East Coast: Philadelphia (610) 237-3928 • Southeast: Monroe (704) 291-2360 • Gulf Coast: Houston (713) 473-6111
 • Midwest: Chicago (630) 260-1650 • West Coast: Los Angeles (562) 597-3932
 Corporate Hqts: Princeton Junction, NJ • (609) 716-4150 • Fax: (609) 716-4145 • Email: ops@qslplus.com

INCIDENT OF 10/27/05 EXPOSURE CALCULATIONS

IR 192 5.2 R/HR AT 1 FT WITH 1 CURIE
DOSE TO THE HAND

20.8 R/HR AT 6", 83.2 R/HR AT 3", 332.8 R/HR AT 1 1/2"
1331.2 R/HR AT 3/4", 5324.8 R/HR AT 3/8"

21.8
CURIES

so with 21.8 ci = 116,080.64 R/HR
1934.67 R/min
32.24 R/SEC X 10 SEC = 322.4 REM

DOSE TO THE WHOLE BODY

$$\frac{5.2 \text{ R/HR}}{X} = \frac{.667^2}{1^2} \quad X = 11.71 \text{ R/HR AT A DISTANCE OF 8"}$$

so with 21.8 ci = 255.28 R/HR, 4.25 R/min, .07 R/SEC
OR 70 mR/SEC so 70 mR X 10 SEC = 700 mR
~~XXXXXXXXXXXXXXXX~~

PLUS

USING 11 FEET DISTANCE AS AN AVERAGE FOR THE
REMAINING 50 SECONDS.

$$\frac{X}{113360 \text{ mR/HR}} = \frac{1^2}{11^2} \quad \text{so} \quad \frac{X}{113360} = \frac{1}{121} \quad \text{so} \quad 121X = 113360 \quad X = 936.9 \text{ mR/HR}$$

OR 15.6 mR/min OR .26 mR/SEC SO .26 X 50 SEC = 13 mR

TOTAL ESTIMATED WHOLE BODY DOSE - 700 mR + 13 mR = 713 mR

B. J. JOHNSON RSM *Bill R. Shurt*

Pg 2

21.8ci

10-31-05 EXPOSURE CALCULATIONS BASED ON
 RE-INACTMENT WITH [REDACTED] WITH NRC PRESENT
 EXTREMITIES
 HANDS IN CONTACT WITH GUIDETUBE FOR 7 SECONDS
225.7 REM

WHOLE BODY

DISTANCE OF 20" TO THIGH ABOVE THE KNEE FOR 7 SEC
5.2 R/HR

$$\frac{X}{113360 \text{ MR/HR}} = \frac{1^2}{1.667^2}$$

$$\frac{X}{113360} = \frac{1}{2.78}$$

$$2.78X = 113360$$

$$X = 40,777 \text{ MR/HR}$$

680 MR/MIN

$$11.3 \text{ MR/SEC} \times 7 \text{ SEC} = \underline{\underline{79 \text{ MR}}}$$

USING THE SAME AVERAGE OF 11 FEET FOR THE REMAINING

$$50 \text{ SECONDS} = .26 \text{ MR/SEC} \times 53 = 14 \text{ MR}$$

SO TOTAL WHOLE BODY EXPOSURE = 93 MR

$$\begin{array}{r} 79 \\ +14 \\ \hline \underline{\underline{93}} \end{array}$$