

Appendix A  
Crosscheck Program Results

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## Appendix A

### Crosscheck Program Results

Teledyne Isotopes Midwest Laboratories (formerly Hazleton Environmental Sciences) has participated in interlaboratory comparison (crosscheck) programs since the formulation of its quality control program in December 1971. These programs are operated by agencies which supply environmental-type samples (e.g., milk or water) containing concentrations of radionuclides known to the issuing agency but not to participant laboratories. The purpose of such a program is to provide an independent check on the laboratory's analytical procedures and to alert it to any possible problems.

Participant laboratories measure the concentrations of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits. Results consistently higher or lower than the known values or outside the control limits indicate a need to check the instruments or procedures used.

The results in Table A-1 were obtained through participation in the environmental sample crosscheck program for milk and water samples during the period 1980 through 1983. This program has been conducted by the U. S. Environmental Protection Agency Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

The results in Table A-2 were obtained for thermoluminescent dosimeters (TLD's) during the period 1976, 1977, 1979, 1980, and 1981 through participation in the Second, Third, Fourth, and Fifth International Intercomparison of Environmental Dosimeters under the sponsorships listed in Table A-2.

Table A-1. U.S. Environmental Protection Agency's crosscheck program, comparison of EPA and Teledyne Isotopes Midwest Laboratory results for milk and water samples, 1980 through 1983<sup>a</sup>.

| Lab Code | Sample Type | Date Collected | Analysis  | Concentration in pCi/l <sup>b</sup>  |   |
|----------|-------------|----------------|---|--|---|
|          |             |                |   | TIML Result<br>$\pm 2\sigma^c$   | EPA Result<br>$\pm 3\sigma$ , n=1 <sup>d</sup>  |
| STW-206  | Water       | Jan. 1980      | Gross Alpha<br>Gross Beta                             | 19.0 $\pm$ 2.0<br>48.0 $\pm$ 2.0   | 30.0 $\pm$ 8.0<br>45.0 $\pm$ 5.0  |
| STW-208  | Water       | Jan. 1980      | Sr-89<br>Sr-90  | 6.1 $\pm$ 1.2<br>23.9 $\pm$ 1.1  | 10.0 $\pm$ 0.5<br>25.5 $\pm$ 1.5  |
| STW-209  | Water       | Feb. 1980      | Cr-51<br>Co-60<br>Zn-65<br>Ru-106<br>Cs-134<br>Cs-137 | 112 $\pm$ 14<br>12.7 $\pm$ 2.3<br>29.7 $\pm$ 2.3<br>71.7 $\pm$ 1.5<br>12.0 $\pm$ 2.0<br>30.0 $\pm$ 2.7 | 101 $\pm$ 5.0<br>11 $\pm$ 5.0<br>25 $\pm$ 5.0<br>51 $\pm$ 5<br>10 $\pm$ 5.0<br>30 $\pm$ 5.0 |
| STW-210  | Water       | Feb. 1980      | H-3   | 1800 $\pm$ 120   | 1750 $\pm$ 340  |
| STW-211  | Water       | March 1980     | Ra-226<br>Ra-228                                      | 15.7 $\pm$ 0.2<br>3.5 $\pm$ 0.3  | 16.0 $\pm$ 2.4<br>2.6 $\pm$ 0.4   |
| STM-217  | Milk        | May 1980       | Sr-89<br>Sr-90  | 4.4 $\pm$ 2.69<br>10.0 $\pm$ 1.0   | 5 $\pm$ 5<br>12 $\pm$ 1.5   |
| STW-221  | Water       | June 1980      | Ra-226<br>Ra-228                                      | 2.0 $\pm$ 0.0<br>1.6 $\pm$ 0.1   | 1.7 $\pm$ 0.8<br>1.7 $\pm$ 0.8  |
| STW-223  | Water       | July 1980      | Gross Alpha<br>Gross Beta                             | 31 $\pm$ 3.0<br>44 $\pm$ 4   | 38 $\pm$ 5.0<br>35 $\pm$ 5.0  |
| STW-224  | Water       | July 1980      | Cs-137<br>Ba-140<br>K-40<br>I-131                     | 33.9 $\pm$ 0.4<br><12<br>1350 $\pm$ 60<br><5.0   | 35 $\pm$ 5.0<br>0<br>1550 $\pm$ 78<br>0   |
| STW-225  | Water       | Aug. 1980      | H-3   | 1280 $\pm$ 50  | 1210 $\pm$ 329  |
| STW-226  | Water       | Sept. 1980     | Sr-89<br>Sr-90  | 22 $\pm$ 1.2<br>12 $\pm$ 0.6   | 24 $\pm$ 8.6<br>15 $\pm$ 2.6  |
| STW-228  | Water       | Sept. 1980     | Gross Alpha<br>Gross Beta                             | NA <sup>e</sup><br>22.5 $\pm$ 0.0  | 32.0 $\pm$ 8.0<br>21.0 $\pm$ 5.0  |
| STW-235  | Water       | Dec. 1980      | H-3   | 2420 $\pm$ 30  | 2240 $\pm$ 604  |

Table A-1. (continued)

| Lab Code | Sample Type | Date Collected | Analysis  | Concentration in pCi/lb   |  |
|----------|-------------|----------------|---|---|--|
|          |             |                |   | TIML Result<br>$\pm 2\sigma^c$  | EPA Result<br>$\pm 3\sigma, n=1^d$   |
| STW-237  | Water       | Jan. 1981      | Sr-89<br>Sr-90  | 13.0 $\pm$ 1.0<br>24.0 $\pm$ 0.6  | 16 $\pm$ 8.7<br>34 $\pm$ 2.9   |
| STM-239  | Milk        | Jan. 1981      | Sr-89<br>Sr-90<br>I-131<br>Cs-137<br>Ba-140<br>K-40   | <210<br>15.7 $\pm$ 2.6<br>30.9 $\pm$ 4.8<br>46.9 $\pm$ 2.9<br><21<br>1330 $\pm$ 53        | 0<br>20 $\pm$ 3.0<br>26 $\pm$ 10.0<br>43 $\pm$ 9.0<br>0<br>1550 $\pm$ 134      |
| STW-240  | Water       | Jan. 1981      | Gross alpha<br>Gross beta                             | 7.3 $\pm$ 2.0<br>41.0 $\pm$ 3.1   | 9 $\pm$ 5.0<br>44 $\pm$ 5.0  |
| STW-243  | Water       | Mar. 1981      | Ra-226<br>Ra-228                                      | 3.5 $\pm$ 0.06<br>6.5 $\pm$ 2.3   | 3.4 $\pm$ 0.5<br>7.3 $\pm$ 1.1   |
| STW-245  | Water       | Apr. 1981      | H-3   | 3210 $\pm$ 115  | 2710 $\pm$ 355   |
| STW-249  | Water       | May 1981       | Sr-89<br>Sr-90  | 51 $\pm$ 3.6<br>22.7 $\pm$ 0.6  | 36 $\pm$ 8.7<br>22 $\pm$ 2.6   |
| STW-251  | Water       | May 1981       | Gross alpha<br>Gross beta                             | 24.0 $\pm$ 5.3<br>16.1 $\pm$ 1.9  | 21 $\pm$ 5.2<br>14 $\pm$ 5.0   |
| STW-252  | Water       | Jun. 1981      | H-3   | 2140 $\pm$ 95   | 1950 $\pm$ 596   |
| STW-255  | Water       | Jul. 1981      | Gross alpha<br>Gross beta                             | 20 $\pm$ 1.5<br>13.0 $\pm$ 2.0  | 22 $\pm$ 9.5<br>15 $\pm$ 8.7   |
| STW-259  | Water       | Sep. 1981      | Sr-89<br>Sr-90  | 16.1 $\pm$ 1.0<br>10.3 $\pm$ 0.9  | 23 $\pm$ 5<br>11 $\pm$ 1.5   |
| STW-265  | Water       | Oct. 1981      | Gross alpha<br>Gross beta<br>Sr-89<br>Sr-90<br>Ra-226 | 71.2 $\pm$ 19.1<br>123.3 $\pm$ 16.6<br>14.9 $\pm$ 2.0<br>13.1 $\pm$ 1.7<br>13.0 $\pm$ 2.0 | 80 $\pm$ 20<br>111 $\pm$ 5.6<br>21 $\pm$ 5<br>14.4 $\pm$ 1.5<br>12.7 $\pm$ 1.9 |
| STW-269  | Water       | Dec. 1981      | H-3   | 2516 $\pm$ 181  | 2700 $\pm$ 355   |

Table A-1. (continued)

| Lab Code | Sample Type | Date Collected | Analysis    | Concentration in pCi/l <sup>b</sup> |  |
|----------|-------------|----------------|-------------|-------------------------------------|--|
|          |             |                |             | TIML Result<br>$\pm 2\sigma^c$      | EPA Result<br>$\pm 3\sigma$ , n=1 <sup>d</sup> |
| STW-270  | Water       | Jan. 1982      | Sr-89       | 24.3 $\pm$ 2.0                      | 21.0 $\pm$ 5.0                                 |
|          |             |                | Sr-90       | 9.4 $\pm$ 0.5                       | 12.0 $\pm$ 1.5                                 |
| STW-273  | Water       | Jan. 1982      | I-131       | 8.6 $\pm$ 0.6                       | 8.4 $\pm$ 1.5                                  |
| STW-275  | Water       | Feb. 1982      | H-3         | 1580 $\pm$ 147                      | 1820 $\pm$ 342                                 |
| STW-276  | Water       | Feb. 1982      | Cr-51       | <61                                 | 0  |
|          |             |                | Co-60       | 26.0 $\pm$ 3.7                      | 20 $\pm$ 5                                     |
|          |             |                | Zn-65       | <13                                 | 15 $\pm$ 5                                     |
|          |             |                | Ru-106      | <46                                 | 20 $\pm$ 5                                     |
|          |             |                | Cs-134      | 26.8 $\pm$ 0.7                      | 22 $\pm$ 5                                     |
|          |             |                | Cs-137      | 29.7 $\pm$ 1.4                      | 23 $\pm$ 5                                     |
|          |             |                |             |                                     |  |
| STW-277  | Water       | Mar. 1982      | Ra-226      | 11.9 $\pm$ 1.9                      | 11.6 $\pm$ 1.7                                 |
| STW-278  | Water       | Mar. 1982      | Gross alpha | 15.6 $\pm$ 1.9                      | 19 $\pm$ 5                                     |
|          |             |                | Gross beta  | 19.2 $\pm$ 0.4                      | 19 $\pm$ 5                                     |
| STW-280  | Water       | Apr. 1982      | H-3         | 2690 $\pm$ 80                       | 2860 $\pm$ 360                                 |
| STW-281  | Water       | Apr. 1982      | Gross alpha | 75 $\pm$ 7.9                        | 85 $\pm$ 21                                    |
|          |             |                | Gross beta  | 114.1 $\pm$ 5.9                     | 106 $\pm$ 5.3                                  |
|          |             |                | Sr-89       | 17.4 $\pm$ 1.8                      | 24 $\pm$ 5                                     |
|          |             |                | Sr-90       | 10.5 $\pm$ 0.6                      | 12 $\pm$ 1.5                                   |
|          |             |                | Ra-226      | 11.4 $\pm$ 2.0                      | 10.9 $\pm$ 1.5                                 |
|          |             |                | Co-60       | <4.6                                | 0  |
|          |             |                |             |                                     |  |
| STW-284  | Water       | May 1982       | Gross alpha | 31.5 $\pm$ 6.5                      | 27.5 $\pm$ 7                                   |
|          |             |                | Gross beta  | 25.9 $\pm$ 3.4                      | 29 $\pm$ 5                                     |
| STW-285  | Water       | June 1982      | H-3         | 1970 $\pm$ 1408                     | 1830 $\pm$ 340                                 |
| STW-286  | Water       | June 1982      | Ra-226      | 12.6 $\pm$ 1.5                      | 13.4 $\pm$ 3.5                                 |
|          |             |                | Ra-228      | 11.1 $\pm$ 2.5                      | 8.7 $\pm$ 2.3                                  |
| STW-287  | Water       | June 1982      | I-131       | 6.5 $\pm$ 0.3                       | 4.4 $\pm$ 0.7                                  |
| STW-290  | Water       | Aug. 1982      | H-3         | 3210 $\pm$ 140                      | 2890 $\pm$ 619                                 |
| STW-291  | Water       | Aug. 1982      | I-131       | 94.6 $\pm$ 2.5                      | 87 $\pm$ 15                                    |

Table A-1. (continued)

| Lab Code | Sample Type | Date Collected | Analysis    | Concentration in pCi/l <sup>b</sup> |                                       |
|----------|-------------|----------------|-------------|-------------------------------------|---------------------------------------|
|          |             |                |             | TIML Result<br>$\pm 2\sigma^c$      | EPA Result<br>$\pm 3\sigma$ , $n=1^d$ |
| STW-292  | Water       | Sept. 1982     | Sr-89       | 22.7 $\pm$ 3.8                      | 24.5 $\pm$ 8.7                        |
|          |             |                | Sr-90       | 10.9 $\pm$ 0.3                      | 14.5 $\pm$ 2.6                        |
| STW-296  | Water       | Oct. 1982      | Co-60       | 20.0 $\pm$ 1.0                      | 20 $\pm$ 8.7                          |
|          |             |                | Zn-65       | 32.3 $\pm$ 5.1                      | 24 $\pm$ 8.7                          |
|          |             |                | Cs-134      | 15.3 $\pm$ 1.5                      | 19.0 $\pm$ 8.7                        |
|          |             |                | Cs-137      | 21.0 $\pm$ 1.7                      | 20.0 $\pm$ 8.7                        |
| STW-297  | Water       | Oct. 1982      | H-3         | 2470 $\pm$ 20                       | 2560 $\pm$ 612                        |
| STW-298  | Water       | Oct. 1982      | Gross alpha | 32 $\pm$ 30                         | 55 $\pm$ 24                           |
|          |             |                | Gross beta  | 81.7 $\pm$ 6.1                      | 81 $\pm$ 8.7                          |
|          |             |                | Sr-89       | <2                                  | 0                                     |
|          |             |                | Sr-90       | 14.1 $\pm$ 0.9                      | 17.2 $\pm$ 2.6                        |
|          |             |                | Cs-134      | <2                                  | 1.8 $\pm$ 8.7                         |
|          |             |                | Cs-137      | 22.7 $\pm$ 0.6                      | 20 $\pm$ 8.7                          |
|          |             |                | Ra-226      | 13.6 $\pm$ 0.3                      | 12.5 $\pm$ 3.2                        |
|          |             |                | Ra-228      | 3.9 $\pm$ 1.0                       | 3.6 $\pm$ 0.9                         |
| STW-301  | Water       | Nov. 1982      | Gross alpha | 12.0 $\pm$ 1.0                      | 19.0 $\pm$ 8.7                        |
|          |             |                | Gross beta  | 34.0 $\pm$ 2.7                      | 24.0 $\pm$ 8.7                        |
| STW-302  | Water       | Dec. 1982      | I-131       | 40.0 $\pm$ 0.0                      | 37.0 $\pm$ 10                         |
| STW-303  | Water       | Dec. 1982      | H-3         | 1940 $\pm$ 20                       | 1990 $\pm$ 345                        |
| STW-304  | Water       | Dec. 1982      | Ra-226      | 11.7 $\pm$ 0.6                      | 11.0 $\pm$ 1.7                        |
|          |             |                | Ra-228      | <3                                  | 0                                     |
| STW-306  | Water       | Jan. 1983      | Sr-89       | 20.0 $\pm$ 8.7                      | 29.2 $\pm$ 5                          |
|          |             |                | Sr-90       | 21.7 $\pm$ 8.4                      | 17.2 $\pm$ 1.5                        |
| STW-307  | Water       | Jan. 1983      | Gross alpha | 29.0 $\pm$ 4.09                     | 29.0 $\pm$ 13                         |
|          |             |                | Gross beta  | 29.3 $\pm$ 0.6                      | 31.0 $\pm$ 8.7                        |
| STM-309  | Milk        | Feb. 1983      | Sr-89       | 35 $\pm$ 2.0                        | 37 $\pm$ 8.7                          |
|          |             |                | Sr-90       | 13.7 $\pm$ 0.6                      | 18 $\pm$ 2.6                          |
|          |             |                | I-131       | 55.7 $\pm$ 3.2                      | 55 $\pm$ 10.4                         |
|          |             |                | Cs-137      | 29 $\pm$ 1.0                        | 26 $\pm$ 8.7                          |
|          |             |                | Ba-140      | <27                                 | 0                                     |
|          |             |                | K-40        | 1637 $\pm$ 5.8                      | 1512 $\pm$ 131                        |

Table A-1. (continued)

| Lab Code             | Sample Type | Date Collected | Analysis   | Concentration in pCi/l <sup>b</sup>  |   |
|----------------------|-------------|----------------|--|--|---|
|                      |             |                |  | TIML Result<br>$\pm 2\sigma^c$   | EPA Result<br>$\pm 3\sigma$ , n=1 <sup>d</sup>  |
| STW-310              | Water       | Feb. 1983      | H-3  | 2470 $\pm$ 80  | 2560 $\pm$ 612  |
| STW-311              | Water       | March 1983     | Ra-226<br>Ra-228   | 11.9 $\pm$ 1.3<br><2.7   | 12.7 $\pm$ 3.3<br>0   |
| STW-312              | Water       | March 1983     | Gross alpha<br>Gross beta  | 31.6 $\pm$ 4.59<br>27.0 $\pm$ 2.0  | 31 $\pm$ 13.4<br>28 $\pm$ 8.7   |
| STW-313              | Water       | April 1983     | H-3  | 3240 $\pm$ 80  | 3330 $\pm$ 627  |
| STW-316              | Water       | May 1983       | Gross alpha<br>Gross beta<br>Sr-89<br>Sr-90<br>Ra-226<br>Co-60<br>Cs-134<br>Cs-137 | 94 $\pm$ 7<br>133 $\pm$ 5<br>19 $\pm$ 1<br>12 $\pm$ 1<br>7.9 $\pm$ 0.4<br>30 $\pm$ 2<br>27 $\pm$ 2<br>29 $\pm$ 1 | 64 $\pm$ 19.9<br>149 $\pm$ 12.4<br>24 $\pm$ 8.7<br>13 $\pm$ 2.6<br>8.5 $\pm$ 2.25<br>30 $\pm$ 8.7<br>33 $\pm$ 8.7<br>27 $\pm$ 8.7 |
| STW-317              | Water       | May 1983       | Sr-89<br>Sr-90   | 59.7 $\pm$ 2.1<br>33.7 $\pm$ 1.5   | 57 $\pm$ 8.7<br>38 $\pm$ 3.3  |
| STW-318 <sup>f</sup> | Water       | May 1983       | Gross alpha<br>Gross beta  | 12.8 $\pm$ 1.5<br>49.4 $\pm$ 3.9   | 11 $\pm$ 8.7<br>57 $\pm$ 8.7  |
| STM-320              | Milk        | June 1983      | Sr-89<br>Sr-90<br>I-131<br>Cs-137<br>K   | 20 $\pm$ 0<br>10 $\pm$ 1<br>30 $\pm$ 1<br>52 $\pm$ 2<br>1553 $\pm$ 57  | 25 $\pm$ 8.7<br>16 $\pm$ 2.6<br>30 $\pm$ 10.4<br>47 $\pm$ 8.7<br>1486 $\pm$ 129   |
| STW-321              | Water       | June 1983      | H-3  | 1470 $\pm$ 89  | 1529 $\pm$ 583  |
| STW-322              | Water       | June 1983      | Ra-226<br>Ra-228   | 4.3 $\pm$ 0.2<br><2.5  | 4.8 $\pm$ 1.24<br>0   |
| STW-323              | Water       | July 1983      | Gross alpha<br>Gross beta  | 3 $\pm$ 1<br>21 $\pm$ 0  | 7 $\pm$ 8.7<br>22 $\pm$ 8.7   |
| STW-324              | Water       | August 1983    | I-131  | 13.3 $\pm$ 0.6   | 14 $\pm$ 10.4   |

Table A-1. (continued)

| Lab Code | Sample Type | Date Collected | Analysis    | Concentration in pCi/l <sup>b</sup> |                                       |
|----------|-------------|----------------|-------------|-------------------------------------|---------------------------------------|
|          |             |                |             | TIML Result<br>$\pm 2\sigma^c$      | EPA Result<br>$\pm 3\sigma$ , $n=1^d$ |
| STAF-326 | Air filter  | August 1983    | Gross beta  | 42 $\pm$ 2                          | 36 $\pm$ 8.7                          |
|          |             |                | Sr-90       | 14 $\pm$ 2                          | 10 $\pm$ 2.6                          |
|          |             |                | Cs-137      | 19 $\pm$ 1                          | 15 $\pm$ 8.7                          |
| STW-328  | Water       | Sept. 1983     | Gross alpha | 2.3 $\pm$ 0.6                       | 5 $\pm$ 8.7                           |
|          |             |                | Gross beta  | 10.7 $\pm$ 1.2                      | 9 $\pm$ 8.7                           |
| STW-329  | Water       | Sept. 1993     | Ra-226      | 3.0 $\pm$ 0.2                       | 3.1 $\pm$ 0.81                        |
|          |             |                | Ra-228      | 3.2 $\pm$ 0.7                       | 2.0 $\pm$ 0.52                        |
| STW-331  | Water       | Oct. 1983      | H-3         | 1303 $\pm$ 32                       | 1210 $\pm$ 570                        |
| STW-335  | Water       | Dec. 1983      | I-131       | 19.6 $\pm$ 1.9                      | 20 $\pm$ 10.4                         |

<sup>a</sup> Results obtained by Teledyne Isotopes Midwest Laboratory as a participant in the environmental sample crosscheck program operated by the Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, (EPA), Las Vegas, Nevada.

<sup>b</sup> All results are in pCi/l, except for elemental potassium (K) data which are in mg/l.

<sup>c</sup> Unless otherwise indicated, the TIML results given as the mean  $\pm 2$  standard deviations for three determinations.

<sup>d</sup> USEPA results are presented as the known values  $\pm$  control limits of 3 for  $n=1$ .

<sup>e</sup> NA = Not analyzed.

<sup>f</sup> Analyzed but not reported to the EPA.

<sup>g</sup> Results after calculations corrected (error in calculations when reported to EPA).



Table A-2. Crosscheck program results, thermoluminescent dosimeters (TLDs).

| Lab Code                                       | TLD Type                  | Measurement               | Teledyne Result<br>$\pm 2\sigma$ <sup>a</sup> | mR                           |  |
|--|---------------------------|---------------------------|---|------------------------------|--|
|  |                           |                           |   | Known Value                  | Average $\pm 2\sigma$ <sup>d</sup><br>(all participants) |
| 2nd International Intercomparison <sup>b</sup> |                           |                           |   |                              |  |
| 115-2 <sup>b</sup>                             | CaF <sub>2</sub> :Mn Bulb | Gamma-Field               | 17.0 $\pm$ 1.9                                | 17.1 <sup>c</sup>            | 16.4 $\pm$ 7.7   |
|  |                           | Gamma-Lab                 | 20.8 $\pm$ 4.1                                | 21.3 <sup>c</sup>            | 18.8 $\pm$ 7.6   |
| 3rd International Intercomparison <sup>e</sup> |                           |                           |   |                              |  |
| 115-3 <sup>e</sup>                             | CaF <sub>2</sub> :Mn Bulb | Gamma-Field               | 30.7 $\pm$ 3.2                                | 34.9 $\pm$ 4.8 <sup>f</sup>  | 31.5 $\pm$ 3.0   |
|  |                           | Gamma-Lab                 | 89.6 $\pm$ 6.4                                | 91.7 $\pm$ 14.6 <sup>f</sup> | 86.2 $\pm$ 24.0  |
| 4th International Intercomparison <sup>g</sup> |                           |                           |   |                              |  |
| 115-4 <sup>g</sup>                             | CaF <sub>2</sub> :Mn Bulb | Gamma-Field               | 14.1 $\pm$ 1.1                                | 14.1 $\pm$ 1.4 <sup>f</sup>  | 16.0 $\pm$ 9.0   |
|  |                           | Gamma-Lab (Low)           | 9.3 $\pm$ 1.3                                 | 12.2 $\pm$ 2.4 <sup>f</sup>  | 12.0 $\pm$ 7.6   |
|  |                           | Gamma-Lab (High)          | 40.4 $\pm$ 1.4                                | 45.8 $\pm$ 9.2 <sup>f</sup>  | 43.9 $\pm$ 13.2  |
| 5th International Intercomparison <sup>h</sup> |                           |                           |   |                              |  |
| 115-5A <sup>h</sup>                            | CaF <sub>2</sub> :Mn Bulb | Gamma-Field               | 31.4 $\pm$ 1.8                                | 30.0 $\pm$ 6.0 <sup>i</sup>  | 30.2 $\pm$ 14.6  |
|  |                           | Gamma-Lab<br>at beginning | 77.4 $\pm$ 5.8                                | 75.2 $\pm$ 7.6 <sup>i</sup>  | 75.8 $\pm$ 40.4  |
|  |                           | Gamma-Lab<br>at the end   | 96.6 $\pm$ 5.8                                | 88.4 $\pm$ 8.8 <sup>i</sup>  | 90.7 $\pm$ 31.2  |

Table A-2. (Continued)

| Lab<br>Code         | TLD<br>Type      | Measurement               | mR                                    |                             |
|---------------------|------------------|---------------------------|---------------------------------------|-----------------------------|
|                     |                  |                           | Teledyne<br>Result<br>$\pm 2\sigma^a$ | Known<br>Value              |
| 115-58 <sup>b</sup> | LiF-100<br>Chips | Gamma-Field               | 30.3 $\pm$ 4.8                        | 30.0 $\pm$ 6 <sup>i</sup>   |
|                     |                  | Gamma-Lab<br>at beginning | 81.1 $\pm$ 7.4                        | 75.2 $\pm$ 7.6 <sup>i</sup> |
|                     |                  | Gamma-Lab<br>at the end   | 85.4 $\pm$ 11.7                       | 88.4 $\pm$ 8.8 <sup>i</sup> |
|                     |                  |                           |                                       | 90.7 $\pm$ 131.2            |

<sup>a</sup>Lab result given is the mean  $\pm 2\sigma$  standard deviations of three determinations.

<sup>b</sup>Second International Intercomparison of Environmental Dosimeters conducted in April of 1976 by the Health and Safety Laboratory (HSL), New York, New York, and the School of Public Health of the University of Texas, Houston, Texas.

<sup>c</sup>Value determined by sponsor of the intercomparison using continuously operated pressurized ion chamber. Mean  $\pm 2\sigma$  standard deviations of results obtained by all laboratories participating in the program.

<sup>d</sup>Third International Intercomparison of Environmental Dosimeters conducted in summer of 1977 by Oak Ridge National Laboratory and the School of Public Health of the University of Texas, Houston, Texas.

<sup>e</sup>Value  $\pm 2\sigma$  standard deviations as determined by sponsor of the intercomparison using continuously operated pressurized ion chamber.

<sup>f</sup>Fourth International Intercomparison of Environmental Dosimeters conducted in summer of 1979 by the School of Public Health of the University of Texas, Houston, Texas.

<sup>h</sup>Fifth International Intercomparison of Environmental Dosimeter conducted in fall of 1980 at Idaho Falls, Idaho and sponsored by the School of Public Health of the University of Texas, Houston, Texas and Environmental Measurements Laboratory, New York, New York, U.S. Department of Energy.

<sup>i</sup>Value determined by sponsor of the intercomparison using continuously operated pressurized ion chamber.

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|-----------------|--|------|--|
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| A/RA            |  | ASAS |  |
| RC              |  | ORNA |  |
| PAO             |  | SCB  |  |
| SGA             |  | ML   |  |
| ENP             |  | PTL  |  |

April 14, 1984

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 Glen Ellyn, IL 60137

Dockets: No. 50-373

Dear Mr. Keppler:

Enclosed is a copy material that was inadvertently left out of Part 3 LaSalle County Station Annual Operating Report, reporting results of environmental radiological and meteorological monitoring.

One copy of this report is provided for your use and 39 copies are being submitted directly to Mr. Edson G. Case, Deputy Director of the Office of Nuclear Reactor Regulation.

Sincerely yours,

John C. Golden  
 Supervisor of Emergency Planning  
 Technical Services Nuclear

cc: G. J. Diederich

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JCG/lnk  
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APR 25 1984