

# Certificate of Analysis

## Standard Reference Material 360a

### Zircaloy-2

| ANALYST       | Sn                                     | Fe                                    | Cr                                 | Ni                                | Cu                            | Mn                            | U            | Ti                                     | Si                               | C                             | N   |
|---------------|--|---------------------------------------|------------------------------------|-----------------------------------|-------------------------------|-------------------------------|--------------|--|----------------------------------|-------------------------------|---|
|               | Iodate Titration<br>Aluminum Reduction | Ortho-Phenanthroline<br>(Photometric) | Diphenylcarbazide<br>(Photometric) | Dimethylglyoxime<br>(Photometric) | Neo-Cuproine<br>(Photometric) | Permanganate<br>(Photometric) | Fluorometric | 5-Sulfosalicylic<br>Acid (Photometric) | Molybdenum Blue<br>(Photometric) | Combustion-<br>Conductometric | Distillation-Nessler<br>Reagent (Photometric) |
|               | %                                      | ppm                                   | ppm                                | ppm                               | ppm                           | ppm                           | ppm          | ppm                                    | ppm                              | ppm                           | ppm   |
| 1.....        | <sup>a</sup> 1.44                      | 1430                                  | 1050                               | 550                               | <sup>b</sup> 136              | 3                             | 0.15         | 26                                     | 49                               | 136                           | 40  |
| 2.....        | 1.43                                   | 1440                                  |                                    | 560                               |                               |                               |              |  |                                  |                               |   |
| 3.....        | 1.43                                   | 1440                                  | 1060                               | 550                               | 143                           |                               | 0.1          | 24                                     | 53                               | 145                           | 46  |
| 4.....        | 1.42                                   | 1450                                  | 1070                               | 590                               | 144                           |                               |              |  | 53                               | 122                           |   |
| 5.....        | 1.42                                   | 1470                                  | 1030                               | 550                               | 143                           |                               | 0.22         | 25                                     | 49                               | 128                           |   |
| 6.....        | <sup>c</sup> 1.41                      | <sup>d</sup> 1415                     | 1080                               | 570                               | 135<br>151                    |                               |              | 30                                     | 51                               | 139                           |   |
| 7.....        | 1.40                                   | 1450                                  |                                    | 525                               | 141                           |                               |              | 30                                     | 48                               | 142                           |   |
| 8.....        | 1.42                                   | 1430                                  | 1070                               | 560                               | 149                           |                               | 0.1          |  | 54                               | 133                           | 43  |
| 9.....        | 1.42                                   | 1440                                  | 1070                               | 560                               | 140                           |                               | 0.16         | 26                                     | 53                               | 156                           |   |
| 10.....       | <sup>e</sup> 1.44                      |                                       | 1020                               | 520                               | 120                           | 2                             |              |  |                                  | 125                           |   |
| Averages..... | 1.42                                   | 1441                                  | 1060                               | 554                               | 140                           | 3                             | 0.15         | 27                                     | 51                               | 136                           | 43  |

<sup>a</sup> Nickel reduction.  
<sup>b</sup> Diethyldithiocarbamate photometric method.  
<sup>c</sup> Iodine titration  
<sup>d</sup> 2,2'-Bipyridine photometric method.  
<sup>e</sup> Lead reduction.

#### List of Cooperating Laboratories

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| <ol style="list-style-type: none"> <li>1. National Bureau of Standards, Washington, D. C.</li> <li>2. The Carborundum Co., Akron, New York.</li> <li>3. Westinghouse Electric Corp., Atomic Fuel Division, Cheswick, Pa.</li> <li>4. Oregon Metallurgical Corp., Albany, Oregon.</li> <li>5. Metals and Controls Inc., Attleboro, Mass.</li> <li>6. Reactive Metals Products, Niles, Ohio.</li> </ol> | <ol style="list-style-type: none"> <li>7. Wah Chang Corp., Albany, Oregon.</li> <li>8. Westinghouse Electric Corporation, Bettis Atomic Power Laboratory, Pittsburgh, Pa.</li> <li>9. The Babcock and Wilcox Co., Lynchburg, Virginia.</li> <li>10. Atomic Energy Commission, New Brunswick Laboratory, New Brunswick, New Jersey.</li> </ol> |
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