

| <p><b>NRC FORM 541</b><br/>(MM-YYYY)</p> <p style="text-align: center;"><b>U.S. NUCLEAR REGULATORY COMMISSION</b></p> <p style="text-align: center;"><b>UNIFORM LOW-LEVEL RADIOACTIVE WASTE MANIFEST</b></p> <p style="text-align: center;"><b>CONTAINER AND WASTE DESCRIPTION</b></p> <p style="text-align: center;">Additional Nuclear Regulatory Commission (NRC) Requirements for Control, Transfer and Disposal of Radioactive Waste</p> | <p style="text-align: center;"><b>1. MANIFEST TOTALS</b></p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th rowspan="2">NUMBER OF PACKAGES/ DISPOSAL CONTAINERS</th> <th rowspan="2">NET WASTE VOLUME (m<sup>3</sup>)</th> <th rowspan="2">NET WASTE WEIGHT (kg)</th> <th colspan="4">SPECIAL NUCLEAR MATERIAL (grams)</th> </tr> <tr> <th>U-233</th> <th>U-235</th> <th>Pu</th> <th>TOTAL</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <th colspan="6">ACTIVITY (MBq)</th> <th rowspan="2">SOURCE (kg)</th> </tr> <tr> <th>ALL NUCLIDES</th> <th>TRITIUM</th> <th>C-14</th> <th>Tc-99</th> <th>I-129</th> <th> </th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> | NUMBER OF PACKAGES/ DISPOSAL CONTAINERS | NET WASTE VOLUME (m <sup>3</sup> ) | NET WASTE WEIGHT (kg) | SPECIAL NUCLEAR MATERIAL (grams) |                                  |  |  | U-233 | U-235 | Pu | TOTAL |  |  |  |  |  |  |  | ACTIVITY (MBq) |  |  |  |  |  | SOURCE (kg) | ALL NUCLIDES | TRITIUM | C-14 | Tc-99 | I-129 |  |  |  |  |  |  |  |  | <p>2. MANIFEST NUMBER</p> <p>3. PAGE _____ OF _____ PAGE(S)</p> <p>4. SHIPPER NAME</p> <p>SHIPPER I.D. NUMBER</p> |
|---|---|---|------------------------------------|-----------------------|----------------------------------|----------------------------------|--|--|-------|-------|----|-------|--|--|--|--|--|--|--|----------------|--|--|--|--|--|-------------|--------------|---------|------|-------|-------|--|--|--|--|--|--|--|--|---|
| NUMBER OF PACKAGES/ DISPOSAL CONTAINERS   | NET WASTE VOLUME (m <sup>3</sup> )  |   |                                    |                       | NET WASTE WEIGHT (kg)            | SPECIAL NUCLEAR MATERIAL (grams) |  |  |       |       |    |       |  |  |  |  |  |  |  |                |  |  |  |  |  |             |              |         |      |       |       |  |  |  |  |  |  |  |  |   |
|   |   | U-233                                   | U-235                              | Pu                    |                                  | TOTAL                            |  |  |       |       |    |       |  |  |  |  |  |  |  |                |  |  |  |  |  |             |              |         |      |       |       |  |  |  |  |  |  |  |  |   |
|   |   |   |                                    |                       |                                  |                                  |  |  |       |       |    |       |  |  |  |  |  |  |  |                |  |  |  |  |  |             |              |         |      |       |       |  |  |  |  |  |  |  |  |   |
| ACTIVITY (MBq)  |   |   |                                    |                       |                                  | SOURCE (kg)                      |  |  |       |       |    |       |  |  |  |  |  |  |  |                |  |  |  |  |  |             |              |         |      |       |       |  |  |  |  |  |  |  |  |   |
| ALL NUCLIDES  | TRITIUM   | C-14                                    | Tc-99                              | I-129                 |                                  |                                  |  |  |       |       |    |       |  |  |  |  |  |  |  |                |  |  |  |  |  |             |              |         |      |       |       |  |  |  |  |  |  |  |  |   |
|   |   |   |                                    |                       |                                  |                                  |  |  |       |       |    |       |  |  |  |  |  |  |  |                |  |  |  |  |  |             |              |         |      |       |       |  |  |  |  |  |  |  |  |   |

| DISPOSAL CONTAINER DESCRIPTION                             |                                       |                             |                                    |                                   |                                   | WASTE DESCRIPTION FOR EACH WASTE TYPE IN CONTAINER |            |                                    |  |   |                                | 16. WASTE CLASSIFICATION<br>AS-Class A<br>Stable<br>AU-Class A<br>Unstable<br>B-Class B<br>C-Class C |   |  |
|--|---------------------------------------|-----------------------------|------------------------------------|-----------------------------------|-----------------------------------|--|------------|------------------------------------|--|---|--------------------------------|--|---|--|
| 5. CONTAINER IDENTIFICATION NUMBER/ GENERATOR ID NUMBER(S) | 6. CONTAINER DESCRIPTION (See Note 1) | 7. VOLUME (m <sup>3</sup> ) | 8. WASTE AND CONTAINER WEIGHT (kg) | 9. SURFACE RADIATION LEVEL        |                                   | 10. SURFACE CONTAMINATION MBq/100cm <sup>2</sup>   |            | 11. PHYSICAL DESCRIPTION           |  |   | 14. CHEMICAL DESCRIPTION       |  | 15. RADIOLOGICAL DESCRIPTION  |  |
|  |                                       |                             |                                    | <input type="checkbox"/> (μSv/hr) | <input type="checkbox"/> (mSv/hr) | ALPHA  | BETA-GAMMA | 11. WASTE DESCRIPTION (See Note 2) | 12. APPROXIMATE WASTE VOLUME(S) IN CONTAINER | 13. SORBENT SOLIDIFICATION, STABILIZATION, MEDIA (See Note 3) | CHEMICAL FORM/ CHELATING AGENT | WEIGHT % CHELATING AGENT IF > 0.1%   | INDIVIDUAL RADIONUCLIDES AND ACTIVITY (MBq) AND CONTAINER TOTAL; OR CONTAINER TOTAL ACTIVITY AND RADIONUCLIDE PERCENT |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |
|  |                                       |                             |                                    |                                   |                                   |  |            |                                    |  |   |                                |  |   |  |

**NOTE 1: Container Description Codes. For containers/waste requiring disposal in approved structural overpacks, the numerical code must be followed by "-OP."**

|                               |   |
|-------------------------------|---|
| 1. Wooden Box or Crate        | 9. Demineralizer                                  |
| 2. Metal Box                  | 10. Gas Cylinder                                  |
| 3. Plastic Drum or Pail       | 11. Bulk Unpackaged Waste                         |
| 4. Metal Drum or Pail         | 12. Unpackaged Components                         |
| 5. Metal Tank or Liner        | 13. High Integrity Container                      |
| 6. Concrete Tank or Liner     | 19. Other. Describe in item 6, or additional page |
| 7. Polyethylene Tank or Liner |   |
| 8. Fiberglass Tank or Liner   |   |

**NOTE 2: Waste Descriptor Codes. (Choose up to three which predominate by volume.)**

|                            |                                  |  |
|----------------------------|----------------------------------|--|
| 20. Charcoal               | 29. Demolition Rubble            | 38. Evaporator Bottoms/Sludges/Concentrates        |
| 21. Incinerator Ash        | 30. Cation Ion-exchange Media    | 39. Compactible Trash                              |
| 22. Soil                   | 31. Anion Ion-exchange Media     | 40. Noncompactible Trash                           |
| 23. Gas                    | 32. Mixed Bed Ion-exchange Media | 41. Animal Carcass                                 |
| 24. Oil                    | 33. Contaminated Equipment       | 42. Biological Material (except animal carcass)    |
| 25. Aqueous Liquid         | 34. Organic Liquid (except oil)  | 43. Activated Material                             |
| 26. Filter Media           | 35. Glassware or Labware         | 59. Other. Describe in item 11, or additional page |
| 27. Mechanical Filter      | 36. Sealed Source/Device         |  |
| 28. EPA or State Hazardous | 37. Paint or Plating             |  |

**NOTE 3: For solidification media that meet disposal site structural stability requirements, the numerical code must be followed by "-S." For all solidification media, the vendor (manufacturer) and brand name must also be identified in item 13. Code 100=NONE REQUIRED.**

| Sorption                 |                  |                    | Solidification  |  |  |
|--------------------------|------------------|--------------------|-----------------|--|--|
| 60. Speedi Dri           | 64. Safe T Sorb  | 69. Chemsil 30     | 74. Petroset    | 89. Other. Describe in item 13, or additional page | 90. Cement   |
| 61. Celetom              | 65. Safe N Dri   | 70. Chemsil 50     | 75. Petroset II |  | 91. Concrete (encapsulation)                       |
| 62. Floor Dry/ Superfine | 66. Florco       | 71. Chemsil 3030   | 76. Aquaset     |  | 92. Bitumen  |
| 63. Hi Dri               | 67. Florco X     | 72. Dicapert HP200 | 77. Aquaset II  |  | 93. Vinyl Chloride                                 |
|                          | 68. Solid A Sorb | 73. Dicapert HP500 |                 |  | 94. Vinyl Ester Styrene                            |
|                          |                  |                    |                 |  | 99. Other. Describe in item 13, or additional page |
|                          |                  |                    |                 |  | 100. None Required                                 |