

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
ANALYSIS/MODEL COVER SHEET
Complete Only Applicable Items

1. QA: QA
 Page: 1 of 45

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Non-Disruptive Event Biosphere Dose Conversion Factors

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**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
ANALYSIS/MODEL REVISION RECORD**

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1. Page: - 2 of 45

2. Analysis or Model Title:

Non-Disruptive Event Biosphere Dose Conversion Factors

3. Document Identifier (including Rev. No. and Change No., if applicable):

ANL-MGR-MD-000009 Rev. 00

| 4. Revision/Change No. | 5. Description of Revision/Change |
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| Rev. 00 | Initial issue. |

EXECUTIVE SUMMARY

The objective of this analysis and model report (AMR) is to develop the Biosphere Dose Conversion Factors (BDCFs) for non-disruptive performance after permanent closure of the potential repository. It is part of the efforts for the development of biosphere Process Model Report (PMR), and the output of this analysis, i.e. the BDCFs, will be used in the Total System Performance Assessment (TSPA) to determine the potential radiation dose from the proposed repository to humans.

The analysis takes the input data from other supporting AMRs and uses qualified software, GENII-S, to generate the BDCFs. The BDCFs are calculated for two categories: the Reasonable Representation and the Bounding Representation. For the Reasonable Representation analysis, stochastic runs are performed to propagate the uncertainties of input parameters into the output BDCFs, whereas for the Bounding Representation analysis, the conservative bounding values are used as input to generate the BDCFs as deterministic values.

A CD-ROM containing input and output files is part of this document as an attachment.

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1. PURPOSE

The purpose of this analysis and model report (AMR) is to develop the Biosphere Dose Conversion Factors (BDCFs) for Non-disruptive performance after permanent closure of the potential repository. It is part of the efforts for the development of biosphere Process Model Report (PMR), and the output of this analysis, i.e. the BDCFs, will be used in the Total System Performance Assessment (TSPA) to determine the potential radiation dose from the proposed repository to humans.

The scope of this activity is to assess how radionuclides released from the proposed repository will be transported through a variety of environmental media, called pathways, to man resulting in a radiation exposure. Radionuclides in the repository will eventually break through the engineered and natural barriers and migrate through groundwater to the accessible environment, i.e., groundwater well heads. Once the radionuclides enter the accessible environment, they may be further transported through various pathways to man, and consequently cause radiation dose to man by inhalation, ingestion, or direct exposure. The release mechanism for the non-disruptive performance assessment is through the usage of contaminated groundwater. For each of the radionuclides of interest, the Total Effective Dose Equivalent (TEDE) from unit radionuclide concentration in groundwater (i.e., pCi/L) will be calculated using GENII-S software.

This analysis is conducted in accordance with Office of Civilian Radioactive Waste Management (OCRWM) Procedure AP-3.10Q, Revision 1, ICN 0, *Analyses and Models*, and an approved development plan (CRWMS M&O 1999a). The validity of the analysis results is limited by the validity of the software and input parameters used for the analysis. Section 3 documents the use of software in the analysis, and Section 4 provides detailed information on the input parameters.

2. QUALITY ASSURANCE

The analyses in this AMR have been determined to be Quality Affecting in accordance with CRWM M&O procedure QAP-2-0, *Conduct of Activities*, because the information will be used to support the Total System Performance Assessment (TSPA) and other quality-affecting activities. Therefore, this AMR is subject to the requirements of the *Quality Assurance Requirements and Description* (QARD) document (DOE 1998). This AMR is covered by the Activity Evaluation for *Scientific Investigation of Radiological Doses in the Biosphere* (CRWMS M&O 1999b).

The primary implementing procedure for this work is OCRWMS procedure AP-3.10Q, *Analyses and Models*. To perform this work, several other procedures are invoked by AP-3.10Q. These include the following:

AP-2.13Q, *Technical Product Development Planning*
AP-2.14Q, *Review of Technical Products*
AP-3.4Q, *Level 3 Change Control*
AP-3.14Q, *Transmittal of Input*
AP-3.15Q, *Managing Document Inputs*
AP-6.1Q, *Controlled Documents*
AP-17.1Q, *Record Source Responsibilities for Inclusionary Records*
AP-SI.1Q, *Software Management*
AP-SIII.2Q, *Qualification of Unqualified Data and the Documentation of Rationale for Accepted Data*
AP-SIII.3Q, *Submittal and Incorporation of Data to the Technical Data Management System*
AP-SIII.4Q, *Development, Review, Online Placement, and Maintenance of Individual Reference Information Base Data Items*.
YAP-SV.1Q, *Control of the Electronic Management of Data*.

Personnel performing work on this analysis were trained and qualified according to OCRWM procedures AP-2.1Q, *Indoctrination and Training of Personnel*, and AP-2.2Q, *Establishment and Verification of Required Education and Experience of Personnel*. Preparation of this analysis did not require the classification of items in accordance with CRWMS M&O procedure QAP-2-3, *Classification of Permanent Items*. This analysis is not a field activity. Therefore, a *Determination of Importance Evaluation* in accordance with CRWMS M&O procedure NLP-2-0 was not required.

No other procedures need to be created to perform this work scope.

3. COMPUTER SOFTWARE AND MODEL USAGE

The software used to perform this work is GENII-S version 1.485 (Leigh et al. 1993). GENII-S is a code for statistical and deterministic calculations of radiation doses to humans from radionuclides in the environment. The software is a qualified software (CSCI: 30034 V1.4.8.5) (CRWMS M&O 1998) and is appropriate for the calculations of the BDCFs to support the TSPA. The usage of the software is within the range of the validation in accordance with AP-SI.1Q. Validation of the biosphere model used by GENII-S will be performed as a separate effort. Until it is validated, the model is designated as TBV (TBV-3955).

GENII-S is controlled under the Configuration Management (CSCI: 30034 V1.4.8.5). The copy of GENII-S software used for this analysis was obtained from the Configuration Management and installed on an IBM compatible PC (CPU # 111210). The analysis was performed on this PC.

In addition to GENII-S software, industrial standard word processing software was used in this work. The word processing software is exempted from the requirements in AP-SI.1Q, *Software Management*. No software routines and macros were developed or used for this analysis.

4. INPUTS

4.1 DATA AND PARAMETERS

The calculation of the BDCFs relies on the outputs of other AMRs. Seven upstream AMRs were developed to provide input data for this analysis. Each of these AMRs provides a suite of related input data for the use of GENII-S input parameters. The outputs of these AMRs are available in the Technical Data Management System (TDMS). The following is a list of these input data with Data Tracking Numbers (DTNs):

- MO9911RIB00064.000. Environmental Transport Parameter Values for Dose Assessment. Submittal date: 11/12/1999.
- MO9911RIB00065.000. Parameter Values for Transfer Coefficients. Submittal date: 11/12/1999.
- MO9901RIB00061.000. Input Parameter Values for External and Inhalation Radiation Exposure Analysis. Submittal date: 10/07/1999. ACC: MOL19991110.0266.
- MO9912RIB00066.000. Parameter Values for Internal and External Dose Conversion Factors. Submittal date: 12/03/1999.
- MO9912SPAING06.033. Ingestion Exposure Pathway Parameters. Submittal date: 12/22/1999.
- MO9912SPACON05.001. Recommended Distribution-based and Fixed (Mean) Consumption Parameters for Locally Produced Food by Type and Tap Water. Submittal date: 12/13/1999.
- SN9912T0512299.001. Leaching Coefficients for GENII-S Code. Submittal date: 12/06/1999.

Input data from the upstream AMRs are provided in two categories: the Reasonable Representation and the Bounding Representation. The Reasonable Representation data are realistic values, whereas the Bounding Representation data are conservative bounding values. The two data sets will be used separately for calculating the BDCFs for the Reasonable Representation and the Bounding Representation, respectively.

4.1.1 Input Data for Reasonable Representation BDCFs

Two methods are available for inputting data into GENII-S software. The first one is through a series of interactive data input screens, and the second one is to modify input data files located in GENII-S directory. [Table 1](#) lists all the input data that must be entered into GENII-S through the data input screens. The table is constructed in a way such that it closely represents the actual data input screens in the software. All of the input data used for the BDCF computations are identified either by the Data Tracking Number (DTN) or as criteria, which are documented in Subsection 4.2 of this document. Other data, even not used or not applicable for the analysis, are also listed in the Table with a brief explanation in the comment column so that an independent,

Table 1. GENII-S Input Parameters For Reasonable Representation BDCF Calculations

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|---|------------|---------------|------------|--------------|-----------------------------------|
| Fixed Data Group 1: Population/Soil/Scenario Data | | | | | |
| Total Population (0=Use POP.IN) | | 1 | | | Criteria ¹ |
| Population Scale Factor | | 1 | | | Criteria |
| Dose Commitment Period (yr) | | 50 | | | Criteria |
| Surface Soil Depth (cm) | | 15 | | | Not used for stochastic runs |
| Surface Soil Density (kg/m ²) | | 225 | | | Not used for stochastic runs |
| Deep Soil Density (kg/m ³) | | 1500 | | | N/A ² |
| Roots in Upper Soil (Fraction) | | 1 | | | Not used for stochastic runs |
| Roots in Deep Soil (Fraction) | | 0 | | | Not used for stochastic runs |
| Air Rel Time Before Intake yr | | 0 | | | N/A |
| H2O Rel Time Before Intake yr | | Varies | | | Varies for each run. See Criteria |
| Fixed Data Group 2: Biotic Trans./Near Field Data | | | | | |
| | | | | | This data group is N/A |
| Fixed Data Group 3: External/Inhalation Exposure | | | | | |
| Chronic Plume Exposure (hr) | | 0 | | | N/A |
| Acute Plume Exposure (hr/phr) | | 0 | | | N/A |
| Inhalation Exposure (hr/yr) | | 0 | | | Not used for stochastic runs |
| Resuspension Model Flag (0-2) | | 1 | | | 1 = Mass Loading Method |
| Mass Load(g/m3);Soil Depth(cm) | | 0 | | | Not used for stochastic runs |
| Transit Time to Rec. Site (hr) | | 0 | | | N/A |
| Swimming Exposure Time (hr) | | 0 | | | N/A |
| Boating Exposure Time (hr) | | 0 | | | N/A |
| Shoreline Exposure Time (hr) | | 0 | | | N/A |
| Type of Shoreline Index (1-4) | | 1 | | | N/A |
| H2O/Sed. Transfer (l/m ² /yr) | | 0 | | | N/A |
| Soil Exposure Time (hr) | | 0 | | | Not used for stochastic runs |
| Home Irrigation Flag (0/1=N/Y) | | 1 | | | Criteria |
| Irrigation Water Index (1-2) | | 1 | | | 1 = ground water. Criteria |
| Home Irrigation Rate (in/yr) | | 0 | | | Not used for stochastic runs |
| Home Irriga. Duration (mo/yr) | | 12 | | | Not used for stochastic runs |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|--|------------|---------------|------------|--------------|---------------------------------|
| Fixed Data Group 4: Ingestion Exposure | | | | | |
| Food Production Option (0-3) | 0 | | | | N/A |
| Food-Weighted Chi/Q (kg-s/m3) | 0 | | | | N/A |
| Crop Resuspension Factor(1/m) | 0 | | | | Not used for stochastic runs |
| Crop Deposition Velocity (m/s) | 0.001 | | | | Not used for stochastic runs |
| Crop Interception Fraction (-) | 0 | | | | Not used for stochastic runs |
| Exported Food Dose (0/1=N/Y) | 0 | | | | N/A |
| Soil Ingestion Rate (mg/day) | 50 | | | | Not used for stochastic runs |
| Swim H2O Ingestion Rate (l/hr) | 0 | | | | N/A |
| Popul. Ingesting Aquatic Food | 1 | | | | Criteria |
| Bioaccumulation Flag (0/1=N/Y) | 0 | | | | 0 = fresh water. Criteria |
| Popul. Drinking Contam Water | 1 | | | | Criteria |
| Drink Water Source Index (0-3) | 1 | | | | 1 = ground water. Criteria |
| Drink Water Treated (0/1=N/Y) | 0 | | | | Criteria |
| Drink Water Holdup Time (days) | 0 | | | | Criteria |
| Drink Water Consumption (l/yr) | 0 | | | | Not used for stochastic runs |
| Array Number 1: Aquatic Food Ingestion | | | | | |
| Fish Transit Time (hr) | 0 | | | | N/A |
| Mollusc Transit Time (hr) | 0 | | | | N/A |
| Crustacea Transit Time (hr) | 0 | | | | N/A |
| Plants Transit Time (hr) | 0 | | | | N/A |
| Fish Production (kg/yr) | 0 | | | | N/A |
| Mollusc Production (kg/yr) | 0 | | | | N/A |
| Crustacea Production (kg/yr) | 0 | | | | N/A |
| Plants Production (kg/yr) | 0 | | | | N/A |
| Fish Holdup (days) | 0 | | | | N/A |
| Mollusc Holdup (days) | 0 | | | | N/A |
| Crustacea Holdup (days) | 0 | | | | N/A |
| Plants Holdup (days) | 0 | | | | N/A |
| Fish Consumption (kg/yr) | 0 | | | | Not used for stochastic runs |
| Mollusc Consumption (kg/yr) | 0 | | | | N/A |
| Crustacea Consumption (kg/yr) | 0 | | | | N/A |
| Plants Consumption (kg/yr) | 0 | | | | N/A |
| Array Number 2: Terrestrial Food Ingestion | | | | | |
| Water Source Flag (0-2) | 1 | | | | 1 = ground water. Criteria |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|---|------------|---------------|------------|--------------|---------------------------------|
| Leaf Vegetables Grow Time (days) | | 0 | | | Not used for stochastic runs |
| Root Vegetables Grow Time (days) | | 0 | | | Not used for stochastic runs |
| Fruit Grow Time (days) | | 0 | | | Not used for stochastic runs |
| Grain Grow Time (days) | | 0 | | | Not used for stochastic runs |
| Leaf Vegetables Irrn Rate (in/yr) | | 0 | | | Not used for stochastic runs |
| Root Vegetables Irrn Rate (in/yr) | | 0 | | | Not used for stochastic runs |
| Fruit Irrigation Rate (in/yr) | | 0 | | | Not used for stochastic runs |
| Grain Irrigation Rate (in/yr) | | 0 | | | Not used for stochastic runs |
| Leaf Vegetables Irrn Time (mo/yr) | | 0 | | | Not used for stochastic runs |
| Root Vegetables Irrn Time (mo/yr) | | 0 | | | Not used for stochastic runs |
| Fruit Irrigation Time (mo/yr) | | 0 | | | Not used for stochastic runs |
| Grain Irrigation Time (mo/yr) | | 0 | | | Not used for stochastic runs |
| Leaf Vegetables Yield (kg/m ²) | | 0 | | | Not used for stochastic runs |
| Root Vegetables Yield (kg/m ²) | | 0 | | | Not used for stochastic runs |
| Fruit Yield (kg/m ²) | | 0 | | | Not used for stochastic runs |
| Grain Yield (kg/m ²) | | 0 | | | Not used for stochastic runs |
| Leaf Veg Production (kg/yr) | | 0 | | | N/A |
| Root Veg Production (kg/yr) | | 0 | | | N/A |
| Fruit Production (kg/yr) | | 0 | | | N/A |
| Grain Production (kg/yr) | | 0 | | | N/A |
| Leaf Vegetables Holdup (days) | | 1 | | | Not used for stochastic runs |
| Root Vegetables Holdup (days) | | 14 | | | Not used for stochastic runs |
| Fruit Holdup (days) | | 14 | | | Not used for stochastic runs |
| Grain Holdup (days) | | 14 | | | Not used for stochastic runs |
| Leaf Veg. Consumption (kg/yr) | | 0 | | | Not used for stochastic runs |
| Root Veg Consumption (kg/yr) | | 0 | | | Not used for stochastic runs |
| Fruit Consumption (kg/yr) | | 0 | | | Not used for stochastic runs |
| Grain Consumption (kg/yr) | | 0 | | | Not used for stochastic runs |
| Array Number 3: Animal Products (Stored Feed) | | | | | |
| Water Source Flag (0-2) | | 1 | | | 1 = ground water. Criteria |
| Beef Consumption Rate (kg/yr) | | 0 | | | Not used for stochastic runs |
| Poultry Consumption Rate (kg/yr) | | 0 | | | Not used for stochastic runs |
| Milk Consumption Rate (l/yr) | | 0 | | | Not used for stochastic runs |
| Eggs Consumption Rate (kg/yr) | | 0 | | | Not used for stochastic runs |
| Beef Holdup (days) | | 20 | | | Not used for stochastic runs |
| Poultry Holdup (days) | | 1 | | | Not used for stochastic runs |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|--|------------|---------------|------------|--------------|-----------------------------------|
| Milk Holdup (days) | | 1 | | | Not used for stochastic runs |
| Eggs Holdup (days) | | 1 | | | Not used for stochastic runs |
| Beef Production (kg/yr) | | 0 | | | N/A |
| Poultry Production (kg/yr) | | 0 | | | N/A |
| Milk Production (kg/yr) | | 0 | | | N/A |
| Eggs Production (kg/yr) | | 0 | | | N/A |
| Beef - Water Fraction | | 1 | | | 100% contaminated water. Criteria |
| Poultry - Water Fraction | | 1 | | | 100% contaminated water. Criteria |
| Milk - Water Fraction | | 1 | | | 100% contaminated water. Criteria |
| Eggs - Water Fraction | | 1 | | | 100% contaminated water. Criteria |
| Beef Diet Fraction | | 0 | | | Not used for stochastic runs |
| Poultry Diet Fraction | | 1 | | | Not used for stochastic runs |
| Milk Diet Fraction | | 0 | | | Not used for stochastic runs |
| Eggs Diet Fraction | | 1 | | | Not used for stochastic runs |
| Beef – Grow Time (days) | | 0 | | | N/A |
| Poultry – Grow Time (days) | | 75 | | | Not used for stochastic runs |
| Milk – Grow Time (days) | | 0 | | | N/A |
| Eggs – Grow Time (days) | | 75 | | | Not used for stochastic runs |
| Beef – Irrigation Rate (in/yr) | | 0 | | | N/A |
| Poultry – Irrigation Rate (in/yr) | | 80.37 | | | Not used for stochastic runs |
| Milk – Irrigation Rate (in/yr) | | 0 | | | N/A |
| Eggs – Irrigation Rate (in/yr) | | 80.37 | | | Not used for stochastic runs |
| Beef – Irrigation Time (mo/yr) | | 0 | | | N/A |
| Poultry – Irrigation Time (mo/yr) | | 4.9 | | | Not used for stochastic runs |
| Milk – Irrigation Time (mo/yr) | | 0 | | | N/A |
| Eggs – Irrigation Time (mo/yr) | | 4.9 | | | Not used for stochastic runs |
| Beef – Feed Yield (kg/m3) | | 0 | | | N/A |
| Poultry – Feed Yield (kg/m3) | | 0 | | | Not used for stochastic runs |
| Milk – Feed Yield (kg/m3) | | 0 | | | N/A |
| Eggs – Feed Yield (kg/m3) | | 0 | | | Not used for stochastic runs |
| Beef – Storage (days) | | 0 | | | N/A |
| Poultry – Storage (days) | | 14 | | | Not used for stochastic runs |
| Milk – Storage (days) | | 0 | | | N/A |
| Eggs – Storage (days) | | 14 | | | Not used for stochastic runs |
| Array Number 4: Animal Products (Fresh Forage) | | | | | |
| Water Source Flag (0-2) | | 1 | | | 1 = ground water. Criteria |
| Beef – Dietary Fraction | | 1 | | | Not used for stochastic runs |
| Milk – Dietary Fraction | | 1 | | | Not used for stochastic runs |
| Beef – Grow Time (days) | | 0 | | | Not used for stochastic runs |
| Milk – Grow Time (days) | | 0 | | | Not used for stochastic runs |
| Beef – Irrigation Rate (in/yr) | | 94.66 | | | Not used for stochastic runs |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|---|------------|---------------|------------|------------------------|---------------------------------|
| Milk – Irrigation Rate (in/yr) | | 94.66 | | | Not used for stochastic runs |
| Beef – Irrigation Time (mo/yr) | | 12 | | | Not used for stochastic runs |
| Milk – Irrigation Time (mo/yr) | | 12 | | | Not used for stochastic runs |
| Beef – Feed Yield (kg/m ²) | | 0 | | | Not used for stochastic runs |
| Milk – Feed Yield (kg/m ²) | | 0 | | | Not used for stochastic runs |
| Beef – Feed Storage Time (days) | | 0 | | | N/A |
| Milk – Feed Storage Time (days) | | 0 | | | N/A |
| Array Number 5: Inventory –Basic Concs. | | | | | |
| Radionuclides | | | | | Varies for each run |
| Air (/l) | | 0 | | | N/A |
| Surf. Soil (/unit) | | 0 | | | N/A |
| Deep Soil (/unit) | | 0 | | | N/A |
| Ground Water (/l) | | 1 | | | Not used for stochastic runs |
| Surface Water (/l) | | 0 | | | N/A |
| Variable Group 1: Population/Soil/Scenario Data | | | | | |
| Population Scale Factor | | 1 | | | Criteria |
| Soil/Plant Transfer Scale Fac. | 2.75E-02 | | 3.64E+01 | LogNormal ³ | MO9911RIB00065.000 |
| Animal Uptake Scale Factor | 1.17E-01 | | 8.51E+00 | LogNormal | MO9911RIB00065.000 |
| Human Dose Fac. Scale Factor | | 1 | | Fixed | Criteria |
| Surface Soil Depth (cm) | | 15 | | Fixed | MO9911RIB00064.000 |
| Surface Soil Density (kg/m ²) | | 225 | | Fixed | MO9911RIB00064.000 |
| Deep Soil Density (kg/m ³) | | 1500 | | | N/A |
| Roots in Upper Soil (Fraction) | | 1 | | Fixed | MO9911RIB00064.000 |
| Roots in Deep Soil (Fraction) | | 0 | | Fixed | MO9911RIB00064.000 |
| Variable Group 2: Biotic Trans./Near Field Data | | | | | |
| | | | | | This data group is N/A |
| Variable Group 3: External/Inhalation Exposure | | | | | |
| Chronic Plume Exposure (hr) | | 0 | | | N/A |
| Acute Plume Exposure (hr/phr) | | 0 | | | N/A |
| Inhalation Exposure (hr/yr) | | 3918.5 | | Fixed | MO9910RIB00061.000 |
| Mass Load(g/m3);Soil Depth(cm) | 7.4E-07 | | 6.4E-05 | LogNormal | MO9910RIB00061.000 |
| Transit Time to Rec. Site (hr) | | 0 | | | N/A |
| Swimming Exposure Time (hr) | | 0 | | | N/A |
| Boating Exposure Time (hr) | | 0 | | | N/A |
| Shoreline Exposure Time (hr) | | 0 | | | N/A |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|---|------------|---------------|------------|---------------------|---------------------------------|
| Type of Shoreline Index (1-4) | | 1 | | | N/A |
| H2O/Sed. Transfer (l/m ² /yr) | | 0 | | | N/A |
| Soil Exposure Time (hr) | | 827 | | Fixed | MO9910RIB00061.000 |
| Home Irrigation Rate (in/yr) | 52 | | 87 | Uniform | MO9910RIB00061.000 |
| Home Irriga. Duration (mo/yr) | | 12 | | Fixed | MO9910RIB00061.000 |
| Variable Group 4: Ingestion Exposure | | | | | |
| Food-Weighted Chi/Q (kg-s/m ³) | | 0 | | | N/A |
| Crop Resuspension Factor(1/m) | 9.6E-12 | | 7.2E-10 | LogNormal | MO9911RIB00064.000 |
| Crop Deposition Velocity (m/s) | | 0.001 | | Fixed | MO9911RIB00064.000 |
| Crop Interception Fraction (-) | 0.044 | | 0.474 | Normal ⁴ | MO9912SPAING06.033 |
| Soil Ingestion Rate (mg/day) | | 50 | | Fixed | MO9911RIB00064.000 |
| Swim H2O Ingestion Rate (l/hr) | | 0 | | | N/A |
| Drink Water Holdup Time (days) | | 0 | | | Criteria |
| Drink Water Consumption (l/yr) | | 752.8 | | Fixed | MO9912SPACON05.001 |
| Variable Group 5: Aquatic Food Ingestion | | | | | |
| Fish Transit Time (hr) | | 0 | | | N/A |
| Mollusc Transit Time (hr) | | 0 | | | N/A |
| Crustacea Transit Time (hr) | | 0 | | | N/A |
| Plants Transit Time (hr) | | 0 | | | N/A |
| Fish Production (kg/yr) | | 0 | | | N/A |
| Mollusc Production (kg/yr) | | 0 | | | N/A |
| Crustacea Production (kg/yr) | | 0 | | | N/A |
| Plants Production (kg/yr) | | 0 | | | N/A |
| Fish Holdup (days) | | 0 | | | N/A |
| Mollusc Holdup (days) | | 0 | | | N/A |
| Crustacea Holdup (days) | | 0 | | | N/A |
| Plants Holdup (days) | | 0 | | | N/A |
| Fish Consumption (kg/yr) | | 0.47 | | Fixed | |
| Mollusc Consumption (kg/yr) | | 0 | | | N/A |
| Crustacea Consumption (kg/yr) | | 0 | | | N/A |
| Plants Consumption (kg/yr) | | 0 | | | N/A |
| Variable Group 6: Terrestrial Food Ingestion | | | | | |
| Leaf Vegetables Grow Time (days) | 45 | 64.5 | 75 | Triangular | MO9912SPAING06.033 |
| Root Vegetables Grow Time (days) | 70 | | 98 | Uniform | MO9912SPAING06.033 |
| Fruit Grow Time (days) | 88 | | 184 | Uniform | MO9912SPAING06.033 |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|--|------------|---------------|------------|--------------|---------------------------------|
| Grain Grow Time (days) | 75 | | 244 | Uniform | MO9912SPAING06.033 |
| Leaf Vegetables Irrn Rate (in/yr) | 28.17 | 42.11 | 80.37 | Triangular | MO9912SPAING06.033 |
| Root Vegetables Irrn Rate (in/yr) | 47.34 | | 51.58 | Uniform | MO9912SPAING06.033 |
| Fruit Irrigation Rate (in/yr) | 30 | | 45.37 | Uniform | MO9912SPAING06.033 |
| Grain Irrigation Rate (in/yr) | 55.85 | | 80.37 | Uniform | MO9912SPAING06.033 |
| Leaf Vegetables Irrn Time (mo/yr) | 2 | 3.2 | 4.9 | Triangular | MO9912SPAING06.033 |
| Root Vegetables Irrn Time (mo/yr) | 3.2 | | 4.6 | Uniform | MO9912SPAING06.033 |
| Fruit Irrigation Time (mo/yr) | 2.9 | | 6.0 | Uniform | MO9912SPAING06.033 |
| Grain Irrigation Time (mo/yr) | 4.9 | | 8.0 | Uniform | MO9912SPAING06.033 |
| Leaf Vegetables Yield (kg/m ²) | 0.59 | 1.82 | 4.1 | Triangular | MO9912SPAING06.033 |
| Root Vegetables Yield (kg/m ²) | 1.73 | 4.32 | 5.86 | Triangular | MO9912SPAING06.033 |
| Fruit Yield (kg/m ²) | 1.57 | | 2.25 | Uniform | MO9912SPAING06.033 |
| Grain Yield (kg/m ²) | 0.33 | | 0.78 | Uniform | MO9912SPAING06.033 |
| Leaf Veg Production (kg/yr) | | 0 | | | N/A |
| Root Veg Production (kg/yr) | | 0 | | | N/A |
| Fruit Production (kg/yr) | | 0 | | | N/A |
| Grain Production (kg/yr) | | 0 | | | N/A |
| Leaf Vegetables Holdup (days) | | 1 | | Fixed | MO9912SPAING06.033 |
| Root Vegetables Holdup (days) | | 14 | | Fixed | MO9912SPAING06.033 |
| Fruit Holdup (days) | | 14 | | Fixed | MO9912SPAING06.033 |
| Grain Holdup (days) | | 14 | | Fixed | MO9912SPAING06.033 |
| Leaf Veg. Consumption (kg/yr) | | 15.14 | | Fixed | MO9912SPACON05.001 |
| Root Veg Consumption (kg/yr) | | 7.81 | | Fixed | MO9912SPACON05.001 |
| Fruit Consumption (kg/yr) | | 15.57 | | Fixed | MO9912SPACON05.001 |
| Grain Consumption (kg/yr) | | 0.48 | | Fixed | MO9912SPACON05.001 |
| Variable Group 7: Animal Product Consumption | | | | | |
| Beef Consumption Rate (kg/yr) | | 2.93 | | Fixed | MO9912SPACON05.001 |
| Poultry Consumption Rate (kg/yr) | | 0.8 | | Fixed | MO9912SPACON05.001 |
| Milk Consumption Rate (l/yr) | | 4.14 | | Fixed | MO9912SPACON05.001 |
| Eggs Consumption Rate (kg/yr) | | 6.68 | | Fixed | MO9912SPACON05.001 |
| Beef Holdup (days) | | 20 | | Fixed | MO9912SPAING06.033 |
| Poultry Holdup (days) | | 1 | | Fixed | MO9912SPAING06.033 |
| Milk Holdup (days) | | 1 | | Fixed | MO9912SPAING06.033 |
| Eggs Holdup (days) | | 1 | | Fixed | MO9912SPAING06.033 |
| Beef Production (kg/yr) | | 0 | | | N/A |
| Poultry Production (kg/yr) | | 0 | | | N/A |
| Milk Production (kg/yr) | | 0 | | | N/A |
| Eggs Production (kg/yr) | | 0 | | | N/A |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|--|------------|---------------|------------|--------------|-----------------------------------|
| Beef Contam. Water (Fract.) | | 1 | | | 100% contaminated water. Criteria |
| Poultry Contam. Water (Fract.) | | 1 | | | 100% contaminated water. Criteria |
| Milk Contam. Water (Fract.) | | 1 | | | 100% contaminated water. Criteria |
| Eggs Contam. Water (Fract.) | | 1 | | | 100% contaminated water. Criteria |
| Variable Group 8: Stored Feed Data | | | | | |
| Beef Diet Fraction | | 0 | | | N/A |
| Poultry Diet Fraction | | 1 | | Fixed | MO9912SPAING06.033 |
| Milk Diet Fraction | | 0 | | | N/A |
| Eggs Diet Fraction | | 1 | | Fixed | MO9912SPAING06.033 |
| Beef – Grow Time (days) | | 0 | | | N/A |
| Poultry – Grow Time (days) | | 75 | | Fixed | MO9912SPAING06.033 |
| Milk – Grow Time (days) | | 0 | | | N/A |
| Eggs – Grow Time (days) | | 75 | | Fixed | MO9912SPAING06.033 |
| Beef – Irrigation Rate (in/yr) | | 0 | | | N/A |
| Poultry – Irrigation Rate (in/yr) | | 80.37 | | Fixed | MO9912SPAING06.033 |
| Milk – Irrigation Rate (in/yr) | | 0 | | | N/A |
| Eggs – Irrigation Rate (in/yr) | | 80.37 | | Fixed | MO9912SPAING06.033 |
| Beef – Irrigation Time (mo/yr) | | 0 | | | N/A |
| Poultry – Irrigation Time (mo/yr) | | 4.9 | | Fixed | MO9912SPAING06.033 |
| Milk – Irrigation Time (mo/yr) | | 0 | | | N/A |
| Eggs – Irrigation Time (mo/yr) | | 4.9 | | Fixed | MO9912SPAING06.033 |
| Beef – Feed Yield (kg/m3) | | 0 | | | N/A |
| Poultry – Feed Yield (kg/m3) | 0.59 | | 0.78 | Uniform | MO9912SPAING06.033 |
| Milk – Feed Yield (kg/m3) | | 0 | | | N/A |
| Eggs – Feed Yield (kg/m3) | 0.59 | | 0.78 | Uniform | MO9912SPAING06.033 |
| Beef – Storage (days) | | 0 | | | N/A |
| Poultry – Storage (days) | | 14 | | Fixed | MO9912SPAING06.033 |
| Milk – Storage (days) | | 0 | | | N/A |
| Eggs – Storage (days) | | 14 | | Fixed | MO9912SPAING06.033 |
| Variable Group 9: Fresh Forage Data | | | | | |
| Beef – Dietary Fraction | | 1 | | Fixed | MO9912SPAING06.033 |
| Milk – Dietary Fraction | | 1 | | Fixed | MO9912SPAING06.033 |
| Beef – Grow Time (days) | 46 | 47 | 135 | Triangular | MO9912SPAING06.033 |
| Milk – Grow Time (days) | 46 | 47 | 135 | Triangular | MO9912SPAING06.033 |
| Beef – Irrigation Rate (in/yr) | | 94.66 | | Fixed | MO9912SPAING06.033 |
| Milk – Irrigation Rate (in/yr) | | 94.66 | | Fixed | MO9912SPAING06.033 |
| Beef – Irrigation Time (mo/yr) | | 12 | | Fixed | MO9912SPAING06.033 |
| Milk – Irrigation Time | | 12 | | Fixed | MO9912SPAING06.033 |

| Parameter | Min. Value | Best Estimate | Max. Value | Distribution | Data Tracking Number / Comments |
|--|------------|---------------|------------|--------------|-----------------------------------|
| (mo/yr) | | | | | |
| Beef – Feed Yield (kg/m ²) | 0.25 | | 1.15 | Uniform | MO9912SPAING06.033 |
| Milk – Feed Yield (kg/m ²) | 0.25 | | 1.15 | Uniform | MO9912SPAING06.033 |
| Beef – Feed Storage Time (days) | | 0 | | | N/A |
| Milk – Feed Storage Time (days) | | 0 | | | N/A |
| Variable Group 10 – 14: Basic Concs. | | | | | |
| Radionuclides | | | | | Varies for each run. See Criteria |
| Air (/l) | | | | | N/A |
| Surf. Soil (/unit) | | | | | N/A |
| Deep Soil (/unit) | | | | | N/A |
| Ground Water (/l) | | 1 | | Fixed | Criteria |
| Surface Water (/l) | | | | | N/A |

- Note:
1. See Section 4.2, Criteria.
 2. N/A = Not applicable for the scenario in this analysis.
 3. For LogNormal distribution, Min.=0.1 percentile, Max.=99.9 percentile.
 4. For Normal distribution, Min.=0.1 percentile, Max.=99.9 percentile.

qualified person can use the table to navigate through the software's data input screens to reproduce the analysis.

In addition to the interactive data input, four data files in GENII-S directory are modified to accommodate the results of the site-specific studies in GENII-S input parameters. The original names for these four files are BIOAC1.DAT, DEFAULT.IN, FTRANS.DAT, and GRDF.DAT, and they are renamed, as indicated below, after the modifications.

BIOAC1.DAT is a bioaccumulation library file. It contains the factors used to relate the concentrations of radionuclides in aquatic biota to the concentrations of radionuclides in water. [Figure 1](#) lists the modified BIOAC1.DAT, which is renamed as BIOAC_RR.TXT, for the Reasonable Representation BDCF calculations. The data that are relevant for this analysis are listed on the 6th column, fresh water fish, and are compiled from the AMR, Transfer Coefficient Analysis (ANL-MGR-MD-000008) (CRWMS M&O 1999f).

DEFAULT.IN is a file containing default values for various parameters needed in a GENII-S calculation. This file is always required to run GENII-S. The default values in this file can be changed by using an external text editor. [Figure 2](#) lists the modified DEFAULT.IN, which is renamed as DEF_RR.TXT, for the Reasonable Representation BDCF calculations. The data that are relevant for this analysis are compiled from three AMRs, Environmental Transport Parameters Analysis (ANL-MGR-MD-000007) (CRWMS M&O 1999g), Input Parameter Values for External and Inhalation Radiation Exposure Analysis (ANL-MGR-MD-000001) (CRWMS M&O 1999e), and the AP-3.14Q Input Transmittal, Ingestion Exposure Pathway Parameters (MO9912SPAING06.033, submittal date: 12/22/1999).

FTRANS.DAT is the food transfer and soil leaching factor library. The food transfer factors relate concentrations of elements in soil to concentrations in farm products grown in that soil and concentrations in animal feed to concentrations in animal products. These data are compiled from the AMR, Transfer Coefficient Analysis (ANL-MGR-MD-000008) (CRWMS M&O 1999f). The soil leaching factors, compiled from the AP-3.14Q Input Transmittal, Leaching coefficients for GENII-S Code (SN9912T0512299.001, submittal date: 12/06/1999), are important parameters for determining radionuclide buildup in soil. [Figure 3](#) lists the modified FTRANS.DAT, which is renamed as FTRANRR.TXT, for the Reasonable Representation BDCF calculations.

Bioaccumulation Factor Library for Reasonable Representation - (30-Aug-99)

| Salt: | Fish | Crustacea | Molluscs | Plants | Fr:Fish | Crustacea | Molluscs | Plants | Cleanup |
|-------|---------|-----------|----------|--------|---------|-----------|----------|---------|---------|
| AC | 30.0 | 1000.0 | 1000.0 | 1000.0 | 25.0 | 1000.0 | 1000.0 | 10000.0 | 0.7 |
| AM | 2500.0 | 360.0 | 290.0 | 2900.0 | 30.0 | 100.0 | 100.0 | 3000.0 | 0.7 |
| C | 20000.0 | 20000.0 | 20000.0 | 1800.0 | 50000.0 | 9000.0 | 9000.0 | 4500.0 | 1.0 |
| CS | 100.0 | 30.0 | 30.0 | 700.0 | 2000.0 | 500.0 | 500.0 | 1000.0 | 0.9 |
| I | 10.0 | 50.0 | 50.0 | 1500.0 | 40.0 | 100.0 | 100.0 | 300.0 | 0.8 |
| MO | 40.0 | 20.0 | 20.0 | 100.0 | 10.0 | 100.0 | 100.0 | 1000.0 | 0.9 |
| NI | 100.0 | 500.0 | 500.0 | 3000.0 | 100.0 | 500.0 | 500.0 | 500.0 | 0.2 |
| NP | 2500.0 | 10.0 | 150.0 | 6.0 | 30.0 | 30.0 | 30.0 | 300.0 | 0.7 |
| PA | 300.0 | 10.0 | 10.0 | 50.0 | 11.0 | 30.0 | 30.0 | 300.0 | 0.7 |
| PU | 1000.0 | 300.0 | 3000.0 | 3600.0 | 30.0 | 100.0 | 100.0 | 890.0 | 0.7 |
| RA | 950.0 | 100.0 | 100.0 | 1000.0 | 50.0 | 1000.0 | 1000.0 | 30000.0 | 0.7 |
| SR | 4.0 | 1.0 | 40.0 | 300.0 | 60.0 | 100.0 | 100.0 | 3000.0 | 0.2 |
| TC | 30.0 | 10.0 | 20.0 | 5000.0 | 20.0 | 100.0 | 100.0 | 5000.0 | 0.7 |
| TH | 600.0 | 1000.0 | 1000.0 | 2000.0 | 100.0 | 100.0 | 100.0 | 3000.0 | 0.7 |
| U | 50.0 | 10.0 | 30.0 | 1000.0 | 10.0 | 100.0 | 100.0 | 900.0 | 0.7 |
| Y | 20.0 | 1000.0 | 1000.0 | 300.0 | 30.0 | 1000.0 | 1000.0 | 5000.0 | 0.2 |

Figure 1. Listing of BIOAC_RR.TXT File

GENII Default Parameters for Reasonable Representation Cases (30-Aug-99)

INVENTORY PARAMETERS-----

| | | |
|--|----------------|------------------------------|
| 0.037, 3.7E4, 3.7E7, 3.7E10, 1.0 | NVU | Source input conversion |
| 1.0, 0.15, 225.0 | SWU | Soil source conversion |
| ENVIRONMENTAL PARAMETERS----- | | |
| 0.008 | ABSHUM | Absolute humidity (kg/m3) |
| 2 | PRCNTI | Air dispersion conserv. flag |
| 0.001 | DPVRES | Deposition vel./resuspension |
| 8.3E-11 | LEAFRS | Leaf resuspension factor |
| 2.0,2.0,3.0,0.8,0.8,0.8,1.0,0.8,1.0,1.5 | BIOMAS | BIOMA2 Biomass (kg/m2) |
| 0.259 | DEPFRR2 | Interception frac./irrigate |
| 15.0 | SURCM | Depth of surface soil (cm) |
| 225.0 | SLDN | Surface soil density (kg/m2) |
| 1.5E3 | SSLDN | Soil density (kg/m3) |
| True | HARVST | Harvest removal considered? |
| 50.0 | SOLING | Soil ingested (mg/da) |
| 14.0 | WTIM | Weathering time (da) |
| 1.0, 0.1, 0.1, 0.1 | TRANS | Translocation, plants |
| 0.1, 0.1, 0.1, 0.1, 1.0, 1.0 | TRANSA | Translocation, animal food |
| 68.0, 0.12, 55.0, 0.12, 68.0, 55.0 | CONSUM | Animal Consumption (kg/da) |
| 50.0, 0.3, 60., 0.3 | DWATER | Animal drinking water (L/da) |
| 0.0, 0.8, 1.0, 0.8 | FRACUT | Acute fresh forage by season |
| 0.2, 0.3, 0.5, 1.0 | SHORWI | Shore width factors |
| 0.02 | INGWAT | Swim water ingested (L/hr) |
| 25295.0 | TCWS | H2O/sed. transfer (L/m2/yr) |
| 0.4, 5.0, 4.0 | YELDBT | BIOT: Veg. prod. (kg/m2/yr) |
| 9.41E-4, 2*7.48E-4 | TOTEXC | BIOT: Excavation (m2/m3-yr) |
| 1.0, 0.81, 0.19, 0.02, 0.008, 0.002, | EXCAV | BIOT: Frac. soil brought to |
| 1.0, 0.9, 0.096, 0.006, 0.0005, 0.0005 | | surface from within the |
| 1.0, 0.9, 0.096, 0.006, 0.0005, 0.0005 | | waste by animal excavation |
| 266.2 | RINH | Chronic breathing (cm3/sec) |
| 330.0 | RINHA | Acute breathing (cm3/sec) |
| 10 | NDIST | Number of distances |
| 805.0, 2414.0, 4023.0, 5632.0, 7241.0, | | |
| 12068.0, 24135.0, 40255.0, 56315.0, | X | JF/chi/Q/pop grid dist. (m) |
| 72405.0 | | |
| 0.1, 0.25, 0.18, 0.91, 0.18, 0.91, 0.18, | | |
| 0.91, 2*0.2 | DRYFAC, DRYFA2 | dry/wet ratio |
| METABOLIC PARAMETERS----- | | |
| 0.5, 50.0, 500.0 | XDIV | |
| 0.5, 0.5, 0.95, 0.05, 0.8, 0.0, 0.0, | ADJ | |
| 0.1, 0.9, 0.5, 0.5, 0.15, 0.4, 0.4, | | |
| 0.01, 0.99, 0.01, 0.99, 0.05, 0.4, 0.4, | | |
| 0.135, 0.015 | | |
| DOSE PARAMETERS----- | | |
| 0.25, 0.15, 0.12, 0.12, 0.03, 0.03, 5*0.06 | WT | Weighting factors |
| 2.0 | SI2I | Semi-infinite/inf |

Figure 2. Listing of DEF_RR.TXT File

| Food Transfer Factors for Reasonalb Representation (8/30/99) | | | | | | | | | | | |
|--|--------|--------|--------|--------|--------|--------|--------|---------|--------|---------|----------|
| Ele- | Dep | Vel | Leafy | Root | Fruit | Grain | Beef | Poultry | Milk | Egg | Leaching |
| men | m/sec | Veg | Veg | -- | -- | day/kg | day/kg | day/L | day/kg | Factor | |
| AC | 1.0E-3 | 3.5E-3 | 3.5E-4 | 3.5E-4 | 3.5E-4 | 2.5E-5 | 4.0E-3 | 2.0E-5 | 2.0E-3 | 1.5E-03 | |
| AM | 1.0E-3 | 2.0E-3 | 4.7E-4 | 4.1E-4 | 9.0E-5 | 2.0E-5 | 6.0E-3 | 2.0E-6 | 4.0E-3 | 3.6E-04 | |
| C | 0.0E+0 | 0.0E+0 | 0.0E+0 | 2.4E-04 |
| CS | 1.0E-3 | 1.3E-1 | 4.9E-2 | 2.2E-1 | 2.6E-2 | 5.0E-2 | 4.4E+0 | 8.0E-3 | 4.0E-1 | 2.4E-04 | |
| I | 1.0E-2 | 3.4E-3 | 5.0E-2 | 5.0E-2 | 5.0E-2 | 7.0E-3 | 1.8E-2 | 1.0E-2 | 3.0E+0 | 5.9E-01 | |
| MO | 1.0E-3 | 2.5E-1 | 6.0E-2 | 6.0E-2 | 6.0E-2 | 1.0E-3 | 1.9E-1 | 1.5E-3 | 9.0E-1 | 6.7E-02 | |
| NI | 1.0E-3 | 2.8E-1 | 6.0E-2 | 6.0E-2 | 3.0E-2 | 5.0E-3 | 1.0E-3 | 1.6E-2 | 1.0E-1 | 1.7E-03 | |
| NP | 1.0E-3 | 3.7E-2 | 1.7E-2 | 1.7E-2 | 2.7E-3 | 1.0E-3 | 4.0E-3 | 5.0E-6 | 2.0E-3 | 1.3E-01 | |
| PA | 1.0E-3 | 2.5E-3 | 2.5E-4 | 2.5E-4 | 2.5E-4 | 5.0E-5 | 4.0E-3 | 5.0E-6 | 2.0E-3 | 1.1E-01 | |
| PU | 1.0E-3 | 4.0E-4 | 2.0E-4 | 1.9E-4 | 2.6E-5 | 1.0E-5 | 3.0E-3 | 1.1E-6 | 8.0E-3 | 1.2E-03 | |
| RA | 1.0E-3 | 8.0E-2 | 1.3E-2 | 6.1E-3 | 1.2E-3 | 9.0E-4 | 3.0E-2 | 1.3E-3 | 2.0E-5 | 1.4E-03 | |
| SR | 1.0E-3 | 2.0E+0 | 1.2E+0 | 2.0E-1 | 2.0E-1 | 8.0E-3 | 8.0E-2 | 1.5E-3 | 3.0E-1 | 3.4E-02 | |
| TC | 1.0E-3 | 4.0E+1 | 1.5E+0 | 1.5E+0 | 7.3E-1 | 1.0E-4 | 3.0E-2 | 1.0E-2 | 3.0E+0 | 2.8E+00 | |
| TH | 1.0E-3 | 4.0E-3 | 3.0E-4 | 2.1E-4 | 3.4E-5 | 1.0E-4 | 4.0E-3 | 5.0E-6 | 2.0E-3 | 2.1E-04 | |
| U | 1.0E-3 | 8.5E-3 | 1.4E-2 | 4.0E-3 | 1.3E-3 | 3.0E-4 | 1.2E+0 | 6.0E-4 | 1.0E+0 | 1.9E-02 | |
| Y | 1.0E-3 | 1.5E-2 | 6.0E-3 | 6.0E-3 | 6.0E-3 | 1.0E-3 | 1.0E-2 | 2.0E-5 | 2.0E-3 | 4.0E-03 | |

Figure 3. Listing of FTRANRR.TXT File

External dose factors for air submersion, water surface, soil surface, deep soil, and buried waste for different radionuclides are given in GRDF.DAT. This file is replaced by GRDFNEW.DAT, which is the output of the AMR, Dose Conversion Factor Analysis (ANL-MGR-MD-000002) (CRWMS M&O 1999h). The file GRDFNEW.DAT is listed in Figure 4.

| | FGR1Z air,water,soil(15 CM) | DCFs (Sv/yr per Bq/n) | (25 Jul 99 MAW) | Air | Water | Soil | Buried | Buried | Buried |
|-------|-----------------------------|-----------------------|-----------------|------------|----------|----------|----------|----------|----------|
| n | | | | Submersion | Surface | 15 cm | 0.15 m | 0.5 m | 1.0m |
| | | m3 | L | "m3" | | m3 | m3 | m3 | m3 |
| C 14 | 7.06E-12 | 0.00E+00 | 2.27E-15 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NI63 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| SR90 | 2.37E-10 | 0.00E+00 | 1.17E-13 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Y 90 | 5.99E-09 | 0.00E+00 | 3.78E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| M093 | 7.95E-10 | 0.00E+00 | 9.97E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NB93M | 1.40E-10 | 0.00E+00 | 1.76E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| TC99 | 5.11E-11 | 0.00E+00 | 2.11E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| I 129 | 1.20E-08 | 0.00E+00 | 2.19E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| CS137 | 9.08E-07 | 0.00E+00 | 5.39E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| U 232 | 4.48E-10 | 0.00E+00 | 1.50E-13 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| TH228 | 2.90E-09 | 0.00E+00 | 1.32E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RA224 | 1.55E-08 | 0.00E+00 | 8.62E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PB212 | 2.17E-07 | 0.00E+00 | 1.14E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| B1212 | 2.30E-06 | 0.00E+00 | 1.27E-09 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| U 234 | 2.41E-10 | 0.00E+00 | 6.75E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| U 236 | 1.58E-10 | 0.00E+00 | 3.60E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PA231 | 5.42E-08 | 0.00E+00 | 3.03E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| AC227 | 1.84E-10 | 0.00E+00 | 8.26E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| TH227 | 1.54E-07 | 0.00E+00 | 8.36E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FR223 | 7.22E-08 | 0.00E+00 | 3.19E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RA223 | 4.30E-07 | 0.00E+00 | 2.36E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NP237 | 3.25E-08 | 0.00E+00 | 1.31E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PA233 | 2.95E-07 | 0.00E+00 | 1.63E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| U 233 | 5.14E-10 | 0.00E+00 | 2.28E-13 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| TH229 | 1.21E-07 | 0.00E+00 | 5.36E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RA225 | 8.80E-09 | 0.00E+00 | 1.86E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| AC225 | 3.40E-07 | 0.00E+00 | 1.94E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| U 238 | 1.08E-10 | 0.00E+00 | 1.74E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| TH234 | 3.33E-08 | 0.00E+00 | 1.73E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PA234 | 2.95E-06 | 0.00E+00 | 1.70E-09 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PU238 | 1.54E-10 | 0.00E+00 | 2.54E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PU240 | 1.50E-10 | 0.00E+00 | 2.47E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| AM241 | 2.58E-08 | 0.00E+00 | 7.38E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| AM243 | 6.87E-08 | 0.00E+00 | 2.40E-11 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NP239 | 2.43E-07 | 0.00E+00 | 1.23E-10 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PU239 | 1.34E-10 | 0.00E+00 | 4.79E-14 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

Figure 4. Listing of GRDFNEW.DAT File

4.1.2 Input Data for Bounding Representation BDCFs

The Bounding Representation analysis has similar input data requirements as the Reasonable Representation analysis. The data required for GENII-S software (through the interactive input screens) are given in [Table 2](#).

Like the Reasonable Representation analysis, some files in GENII-S directory need to be modified to accommodate the results of the site-specific studies in GENII-S input parameters. The original names for these four files are BIOAC1.DAT, DEFAULT.IN, FTRANS.DAT, and GRDF.DAT. After modification, each of them is renamed as a different file, as indicated below.

BIOAC1.DAT is a bioaccumulation library file. It contains the factors used to relate the concentrations of radionuclides in aquatic biota to the concentrations of radionuclides in water. [Figure 5](#) lists the modified BIOAC1.DAT, which is renamed as BIOAC_SC.TXT, for the Bounding Representation BDCF calculations. The data that are relevant for this analysis are listed on the 6th column, fresh water fish, and are compiled from the AMR, Transfer Coefficient Analysis (ANL-MGR-MD-000008) (CRWMS M&O 1999f).

| Bioaccumulation Factor Library for Safety Cases - (30-Aug-99) | | | | | | | | | |
|---|---------|-----------|----------|--------|---------|-----------|----------|---------|---------|
| Salt: | Fish | Crustacea | Molluscs | Plants | Fr:Fish | Crustacea | Molluscs | Plants | Cleanup |
| AC | 30.0 | 1000.0 | 1000.0 | 1000.0 | 330.0 | 1000.0 | 1000.0 | 10000.0 | 0.7 |
| AM | 2500.0 | 360.0 | 290.0 | 2900.0 | 250.0 | 100.0 | 100.0 | 3000.0 | 0.7 |
| C | 20000.0 | 20000.0 | 20000.0 | 1800.0 | 50000.0 | 9000.0 | 9000.0 | 4500.0 | 1.0 |
| CS | 100.0 | 30.0 | 30.0 | 700.0 | 15000.0 | 500.0 | 500.0 | 1000.0 | 0.9 |
| I | 10.0 | 50.0 | 50.0 | 1500.0 | 500.0 | 100.0 | 100.0 | 300.0 | 0.8 |
| MO | 40.0 | 20.0 | 20.0 | 100.0 | 10.0 | 100.0 | 100.0 | 1000.0 | 0.9 |
| NI | 100.0 | 500.0 | 500.0 | 3000.0 | 100.0 | 500.0 | 500.0 | 500.0 | 0.2 |
| NP | 2500.0 | 10.0 | 150.0 | 6.0 | 2500.0 | 30.0 | 30.0 | 300.0 | 0.7 |
| PA | 300.0 | 10.0 | 10.0 | 50.0 | 30.0 | 30.0 | 30.0 | 300.0 | 0.7 |
| PU | 1000.0 | 300.0 | 3000.0 | 3600.0 | 250.0 | 100.0 | 100.0 | 890.0 | 0.7 |
| RA | 950.0 | 100.0 | 100.0 | 1000.0 | 520.0 | 1000.0 | 1000.0 | 30000.0 | 0.7 |
| SR | 4.0 | 1.0 | 40.0 | 300.0 | 100.0 | 100.0 | 100.0 | 3000.0 | 0.2 |
| TC | 30.0 | 10.0 | 20.0 | 5000.0 | 78.0 | 100.0 | 100.0 | 5000.0 | 0.7 |
| TH | 600.0 | 1000.0 | 1000.0 | 2000.0 | 1000.0 | 100.0 | 100.0 | 3000.0 | 0.7 |
| U | 50.0 | 10.0 | 30.0 | 1000.0 | 50.0 | 100.0 | 100.0 | 900.0 | 0.7 |
| Y | 20.0 | 1000.0 | 1000.0 | 300.0 | 100.0 | 1000.0 | 1000.0 | 5000.0 | 0.2 |

Figure 5. Listing of BIOAC_SC.TXT File

DEFAULT.IN is a file containing default values for various parameters needed in a GENII-S calculation. This file is always required to run GENII-S. The default values in this file can be changed by using an external text editor. [Figure 6](#) lists the modified DEFAULT.IN, which is renamed as DEF_SC.TXT, for the Bounding Representation BDCF calculations. The data that are relevant for this analysis are compiled from three AMRs, Environmental Transport Parameters Analysis (ANL-MGR-MD-000007) (CRWMS M&O 1999g), Input Parameter Values for External and Inhalation Radiation Exposure Analysis (ANL-MGR-MD-000001) (CRWMS M&O 1999e), and the AP-3.14Q Input Transmittal, Ingestion Exposure Pathway Parameters (MO9912SPAING06.033, submittal date: 12/22/1999).

Table 2. GENII-S Input Parameters For Bounding Representation BDCF Calculations

| Parameter | Bounding Values | Data Tracking/Comments |
|---|-----------------|-----------------------------------|
| Fixed Data Group 1: Population/Soil/Scenario Data | | |
| Total Population(0=Use POP.IN) | 1 | Criteria ¹ |
| Population Scale Factor | 1 | Criteria |
| Dose Commitment Period (yr) | 50 | Criteria |
| Surface Soil Depth (cm) | 15 | MO9911RIB00064.000 |
| Surface Soil Density (kg/m ²) | 180 | MO9911RIB00064.000 |
| Deep Soil Density (kg/m ³) | 1500 | N/A ² |
| Roots in Upper Soil (Fraction) | 1 | MO9911RIB00064.000 |
| Roots in Deep Soil (Fraction) | 0 | MO9911RIB00064.000 |
| Air Rel Time Before Intake yr | 0 | N/A |
| H2O Rel Time Before Intake yr | Varies | Varies for each run. See Criteria |
| Fixed Data Group 2: Biotic Trans./Near Field Data | | |
| | | This Data Group is N/A |
| Fixed Data Group 3: External/Inhalation Exposure | | |
| Chronic Plume Exposure (hr) | 0 | N/A |
| Acute Plume Exposure (hr/phr) | 0 | N/A |
| Inhalation Exposure (hr/yr) | 6353.5 | MO9910RIB00061.000 |
| Resuspension Model Flag (0-2) | 1 | 1 = Mass Loading Method |
| Mass Load(g/m ³);Soil Depth(cm) | 6.4E-05 | MO9910RIB00061.000 |
| Transit Time to Rec. Site (hr) | 0 | N/A |
| Swimming Exposure Time (hr) | 0 | N/A |
| Boating Exposure Time (hr) | 0 | N/A |
| Shoreline Exposure Time (hr) | 0 | N/A |
| Type of Shoreline Index (1-4) | 1 | N/A |
| H2O/Sed. Transfer (l/m ² /yr) | 0 | N/A |
| Soil Exposure Time (hr) | 3947 | MO9910RIB00061.000 |
| Home Irrigation Flag (0/1=N/Y) | 1 | Criteria |
| Irrigation Water Index (1-2) | 1 | 1 = ground water. Criteria |
| Home Irrigation Rate (in/yr) | 109 | MO9910RIB00061.000 |
| Home Irriga. Duration (mo/yr) | 12 | MO9910RIB00061.000 |
| Fixed Data Group 4: Ingestion Exposure | | |
| Food Production Option (0-3) | 0 | N/A |
| Food-Weighted Chi/Q (kg-s/m ³) | 0 | N/A |
| Crop Resuspension Factor(1/m) | 1.4E-09 | MO9911RIB00064.000 |
| Crop Deposition Velocity (m/s) | 0.1 | MO9911RIB00064.000 |
| Crop Interception Fraction (-) | 0.474 | MO9912SPAING06.033 |
| Exported Food Dose (0/1=N/Y) | 0 | N/A |
| Soil Ingestion Rate (mg/day) | 410 | MO9911RIB00064.000 |
| Swim H2O Ingestion Rate (l/hr) | 0 | N/A |
| Popul. Ingesting Aquatic Food | 1 | Criteria |
| Bioaccumulation Flag (0/1=N/Y) | 0 | 0 = fresh water. Criteria |
| Popul. Drinking Contam Water | 1 | Criteria |
| Drink Water Source Index (0-3) | 1 | 1 = ground water. Criteria |
| Drink Water Treated (0/1=N/Y) | 0 | Criteria |
| Drink Water Holdup Time (days) | 0 | Criteria |
| Drink Water Consumption (l/yr) | 1487.45 | MO9912SPACON05.001 |
| Array Number 1: Aquatic Food Ingestion | | |
| Fish Transit Time (hr) | 0 | N/A |
| Mollusc Transit Time (hr) | 0 | N/A |
| Crustacea Transit Time (hr) | 0 | N/A |
| Plants Transit Time (hr) | 0 | N/A |

| Parameter | Bounding Values | Data Tracking/Comments |
|---|------------------------|-------------------------------|
| Fish Production (kg/yr) | 0 | N/A |
| Mollusc Production (kg/yr) | 0 | N/A |
| Crustacea Production (kg/yr) | 0 | N/A |
| Plants Production (kg/yr) | 0 | N/A |
| Fish Holdup (days) | 0 | N/A |
| Mollusc Holdup (days) | 0 | N/A |
| Crustacea Holdup (days) | 0 | N/A |
| Plants Holdup (days) | 0 | N/A |
| Fish Consumption (kg/yr) | 8.79 | MO9912SPACON05.001 |
| Mollusc Consumption (kg/yr) | 0 | N/A |
| Crustacea Consumption (kg/yr) | 0 | N/A |
| Plants Consumption (kg/yr) | 0 | N/A |
| Array Number 2: Terrestrial Food Ingestion | | |
| Water Source Flag (0-2) | 1 | 1 = ground water. Criteria |
| Leaf Vegetables Grow Time (days) | 75 | MO9912SPAING06.033 |
| Root Vegetables Grow Time (days) | 98 | MO9912SPAING06.033 |
| Fruit Grow Time (days) | 184 | MO9912SPAING06.033 |
| Grain Grow Time (days) | 244 | MO9912SPAING06.033 |
| Leaf Vegetables Irrn Rate (in/yr) | 80.37 | MO9912SPAING06.033 |
| Root Vegetables Irrn Rate (in/yr) | 51.58 | MO9912SPAING06.033 |
| Fruit Irrigation Rate (in/yr) | 45.37 | MO9912SPAING06.033 |
| Grain Irrigation Rate (in/yr) | 80.37 | MO9912SPAING06.033 |
| Leaf Vegetables Irrn Time (mo/yr) | 2.0 | MO9912SPAING06.033 |
| Root Vegetables Irrn Time (mo/yr) | 3.2 | MO9912SPAING06.033 |
| Fruit Irrigation Time (mo/yr) | 2.9 | MO9912SPAING06.033 |
| Grain Irrigation Time (mo/yr) | 4.9 | MO9912SPAING06.033 |
| Leaf Vegetables Yield (kg/m ²) | 0.59 | MO9912SPAING06.033 |
| Root Vegetables Yield (kg/m ²) | 1.73 | MO9912SPAING06.033 |
| Fruit Yield (kg/m ²) | 1.57 | MO9912SPAING06.033 |
| Grain Yield (kg/m ²) | 0.33 | MO9912SPAING06.033 |
| Leaf Veg Production (kg/yr) | 0 | N/A |
| Root Veg Production (kg/yr) | 0 | N/A |
| Fruit Production (kg/yr) | 0 | N/A |
| Grain Production (kg/yr) | 0 | N/A |
| Leaf Vegetables Holdup (days) | 1 | MO9912SPAING06.033 |
| Root Vegetables Holdup (days) | 14 | MO9912SPAING06.033 |
| Fruit Holdup (days) | 14 | MO9912SPAING06.033 |
| Grain Holdup (days) | 14 | MO9912SPAING06.033 |
| Leaf Veg. Consumption (kg/yr) | 59.68 | MO9912SPACON05.001 |
| Root Veg Consumption (kg/yr) | 29.86 | MO9912SPACON05.001 |
| Fruit Consumption (kg/yr) | 97.69 | MO9912SPACON05.001 |
| Grain Consumption (kg/yr) | 12.33 | MO9912SPACON05.001 |
| Array Number 3: Animal Products (Stored Feed) | | |
| Water Source Flag (0-2) | 1 | 1 = ground water. Criteria |
| Beef Consumption Rate (kg/yr) | 53.11 | MO9912SPACON05.001 |
| Poultry Consumption Rate (kg/yr) | 10.50 | MO9912SPACON05.001 |
| Milk Consumption Rate (l/yr) | 100.36 | MO9912SPACON05.001 |
| Eggs Consumption Rate (kg/yr) | 33.34 | MO9912SPACON05.001 |
| Beef Holdup (days) | 20 | MO9912SPAING06.033 |
| Poultry Holdup (days) | 1 | MO9912SPAING06.033 |
| Milk Holdup (days) | 1 | MO9912SPAING06.033 |
| Eggs Holdup (days) | 1 | MO9912SPAING06.033 |
| Beef Production (kg/yr) | 0 | N/A |
| Poultry Production (kg/yr) | 0 | N/A |
| Milk Production (kg/yr) | 0 | N/A |

| Parameter | Bounding Values | Data Tracking/Comments |
|--|-----------------|----------------------------|
| Eggs Production (kg/yr) | 0 | N/A |
| Beef - Water Fraction | 1 | MO9912SPAING06.033 |
| Poultry - Water Fraction | 1 | MO9912SPAING06.033 |
| Milk - Water Fraction | 1 | MO9912SPAING06.033 |
| Eggs - Water Fraction | 1 | MO9912SPAING06.033 |
| Beef Diet Fraction | 0 | MO9912SPAING06.033 |
| Poultry Diet Fraction | 1 | MO9912SPAING06.033 |
| Milk Diet Fraction | 0 | MO9912SPAING06.033 |
| Eggs Diet Fraction | 1 | MO9912SPAING06.033 |
| Beef – Grow Time (days) | 0 | N/A |
| Poultry – Grow Time (days) | 75 | MO9912SPAING06.033 |
| Milk – Grow Time (days) | 0 | N/A |
| Eggs – Grow Time (days) | 75 | MO9912SPAING06.033 |
| Beef – Irrigation Rate (in/yr) | 0 | N/A |
| Poultry – Irrigation Rate (in/yr) | 80.37 | MO9912SPAING06.033 |
| Milk – Irrigation Rate (in/yr) | 0 | N/A |
| Eggs – Irrigation Rate (in/yr) | 80.37 | MO9912SPAING06.033 |
| Beef – Irrigation Time (mo/yr) | 0 | N/A |
| Poultry – Irrigation Time (mo/yr) | 4.9 | MO9912SPAING06.033 |
| Milk – Irrigation Time (mo/yr) | 0 | N/A |
| Eggs – Irrigation Time (mo/yr) | 4.9 | MO9912SPAING06.033 |
| Beef – Feed Yield (kg/m ³) | 0 | N/A |
| Poultry – Feed Yield (kg/m ³) | 0.59 | MO9912SPAING06.033 |
| Milk – Feed Yield (kg/m ³) | 0 | N/A |
| Eggs – Feed Yield (kg/m ³) | 0.59 | MO9912SPAING06.033 |
| Beef – Storage (days) | 0 | N/A |
| Poultry – Storage (days) | 14 | MO9912SPAING06.033 |
| Milk – Storage (days) | 0 | N/A |
| Eggs – Storage (days) | 14 | MO9912SPAING06.033 |
| Array Number 4: Animal Products (Fresh Forage) | | |
| Water Source Flag (0-2) | 1 | 1 = ground water. Criteria |
| Beef – Dietary Fraction | 1 | MO9912SPAING06.033 |
| Milk – Dietary Fraction | 1 | MO9912SPAING06.033 |
| Beef – Grow Time (days) | 135 | MO9912SPAING06.033 |
| Milk – Grow Time (days) | 135 | MO9912SPAING06.033 |
| Beef – Irrigation Rate (in/yr) | 94.66 | MO9912SPAING06.033 |
| Milk – Irrigation Rate (in/yr) | 94.66 | MO9912SPAING06.033 |
| Beef – Irrigation Time (mo/yr) | 12 | MO9912SPAING06.033 |
| Milk – Irrigation Time (mo/yr) | 12 | MO9912SPAING06.033 |
| Beef – Feed Yield (kg/m ²) | 0.25 | MO9912SPAING06.033 |
| Milk – Feed Yield (kg/m ²) | 0.25 | MO9912SPAING06.033 |
| Beef – Feed Storage Time (days) | 0 | N/A |
| Milk – Feed Storage Time (days) | 0 | N/A |
| Array Number 5: Inventory –Basic Concs. | | |
| Radionuclides | | Varies for each run |
| Air (/l) | 0 | N/A |
| Surf. Soil (/unit) | 0 | N/A |
| Deep Soil (/unit) | 0 | N/A |
| Ground Water (/l) | 1 | Criteria |
| Surface Water (/l) | 0 | N/A |

Note: 1. See Subsection 4.2, Criteria.
 2. N/A = Not applicable for the scenario in this analysis.

GENII Default Parameters for Safety Cases (30-Aug-99)

| INVENTORY PARAMETERS----- | |
|--|-------------------------------------|
| 0.037, 3.7E4, 3.7E7, 3.7E10, 1.0 | NVU Source input conversion |
| 1.0, 0.15, 225.0 | SVU Soil source conversion |
| ENVIRONMENTAL PARAMETERS----- | |
| 0.008 | ABSHUM Absolute humidity (kg/m3) |
| 2 | PRCNTI Air dispersion conserv. flag |
| 0.1 | DPVRES Deposition vel./resuspension |
| 1.4E-9 | LEAFRS Leaf resuspension factor |
| 1.5,2.0,0.7,0.4,0.8,0.8,0.8,0.7,0.7 | BIOMAS BIOMA2 Biomass (kg/m2) |
| 0.477 | DEPFR2 Interception frac./irrigate |
| 15.0 | SURCM Depth of surface soil (cm) |
| 180.0 | SLDN Surface soil density (kg/m2) |
| 1.5E3 | SSLDN Soil density (kg/m3) |
| True | HARVST Harvest removal considered? |
| 410.0 | SOLING Soil ingested (mg/da) |
| 14.0 | WTIM Weathering time (da) |
| 1.0, 0.1, 0.1, 0.1 | TRANS Translocation, plants |
| 0.1, 0.1, 0.1, 0.1, 1.0, 1.0 | TRANSA Translocation, animal food |
| 68.0, 0.4, 73.0, 0.4, 68.0, 73.0 | CONSUM Animal Consumption (kg/da) |
| 75.0, 0.5, 160., 0.5 | DWATER Animal drinking water (L/da) |
| 0.0, 0.8, 1.0, 0.8 | FRACUT Acute fresh forage by season |
| 0.2, 0.3, 0.5, 1.0 | SHORWI Shore width factors |
| 0.02 | INGWAT Swim water ingested (L/hr) |
| 25295.0 | TCWS H2O/sed. transfer (L/m2/yr) |
| 0.4, 5.0, 4.0 | YELDBT BIOT: Veg. prod. (kg/m2/yr) |
| 9.41E-4, 2*7.48E-4 | TOTEXC BIOT: Excavation (m2/m3-yr) |
| 1.0, 0.81, 0.19, 0.02, 0.008, 0.002, | EXCAV BIOT: Frac. soil brought to |
| 1.0, 0.9, 0.096, 0.006, 0.0005, 0.0005, | surface from within the |
| 1.0, 0.9, 0.096, 0.006, 0.0005, 0.0005 | waste by animal excavation |
| 358.8 | RINH Chronic breathing (cm3/sec) |
| 330.0 | RINHA Acute breathing (cm3/sec) |
| 10 | NDIST Number of distances |
| 805.0, 2414.0, 4023.0, 5632.0, 7241.0, | X JF/chi/Q/pop grid dist. (m) |
| 12068.0, 24135.0, 40255.0, 56315.0, | |
| 72405.0 | |
| 0.2, 0.38, 0.24, 0.93, 0.22, 0.93, 0.22, | DRYFAC, DRYFA2 dry/wet ratio |
| 0.93, 2*0.22 | |
| METABOLIC PARAMETERS----- | |
| 0.5, 50.0, 500.0 | XDIV |
| 0.5, 0.5, 0.95, 0.05, 0.8, 0.0, 0.0, 0.2, 0.0, | ADJ |
| 0.1, 0.9, 0.5, 0.5, 0.15, 0.4, 0.4, 0.05, 0.0, | |
| 0.01, 0.99, 0.01, 0.99, 0.05, 0.4, 0.4, 0.135, 0.015 | |
| DOSE PARAMETERS----- | |
| 0.25, 0.15, 0.12, 0.12, 0.03, 0.03, 5*0.06 | WT Weighting factors |
| 2.0 | SIZI Semi-infinite/inf |

Figure 6. Listing of DEF_SC.TXT File

FTRANS.DAT is the food transfer and soil leaching factor library. The food transfer factors relate concentrations of elements in soil to concentrations in farm products grown in that soil and concentrations in animal feed to concentrations in animal products. These data are compiled from the AMR, Transfer Coefficient Analysis (ANL-MGR-MD-000008) (CRWMS M&O 1999f). The soil leaching factors, compiled from the AP-3.14Q Input Transmittal, Leaching Coefficients for GENII-S Code (SN9912T0512299.001, submittal date: 12/06/1999), are important parameters for determining radionuclide buildup in soil. [Figure 7](#) lists the modified FTRANS.DAT, which is renamed as FTRANSC.TXT, for the Bounding Representation BDCF calculations.

| Food Transfer Factors for Safety Case (8/30/99) | | | | | | | | | | | |
|---|--------------|---------------------|-------------|--------|--------|-----------------|----------------|-------------------|---------------|---------------|--------------------|
| Ele- ment | Dep m/sec | Vel Leafy Veg | Root Veg | -- | -- | Grain day/kg | Beef day/kg | Poultry day/kg | Milk day/L | Egg day/kg | Leaching Factor |
| AC | 1.0E-3 | 3.5E-2 | 3.5E-3 | 3.5E-3 | 3.5E-3 | 1.0E-4 | 1.6E-2 | 8.0E-5 | 8.0E-3 | 1.5E-03 | |
| AM | 1.0E-3 | 2.0E-2 | 4.7E-3 | 4.1E-3 | 9.0E-4 | 8.0E-5 | 2.4E-2 | 8.0E-6 | 1.6E-2 | 2.3E-06 | |
| C | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 | 0.0E+0 | 6.8E-05 | |
| CS | 1.0E-3 | 1.3E+0 | 4.9E-1 | 2.2E+0 | 2.6E-1 | 2.0E-1 | 1.8E+1 | 3.2E-2 | 1.6E+0 | 6.8E-05 | |
| I | 1.0E-2 | 3.4E-2 | 5.0E-1 | 5.0E-1 | 2.8E-2 | 7.2E-2 | 4.0E-2 | 1.2E+1 | 8.4E-03 | | |
| MO | 1.0E-3 | 2.5E+0 | 6.0E-1 | 6.0E-1 | 6.0E-1 | 4.0E-3 | 7.6E-1 | 6.0E-3 | 3.6E+0 | 1.3E-02 | |
| NI | 1.0E-3 | 2.8E+0 | 6.0E-1 | 6.0E-1 | 3.0E-1 | 2.0E-2 | 4.0E-3 | 6.4E-2 | 4.0E-1 | 1.9E-04 | |
| NP | 1.0E-3 | 3.7E-1 | 1.7E-1 | 1.7E-1 | 2.7E-2 | 4.0E-3 | 1.6E-2 | 2.0E-5 | 8.0E-3 | 1.7E-03 | |
| PA | 1.0E-3 | 2.5E-2 | 2.5E-3 | 2.5E-3 | 2.5E-3 | 2.0E-4 | 1.6E-2 | 2.0E-5 | 8.0E-3 | 1.1E-01 | |
| PU | 1.0E-3 | 4.0E-3 | 2.0E-3 | 1.9E-3 | 2.6E-4 | 4.0E-5 | 1.2E-2 | 4.4E-6 | 3.2E-2 | 1.9E-05 | |
| RA | 1.0E-3 | 8.0E-1 | 1.3E-1 | 6.1E-2 | 1.2E-2 | 3.6E-3 | 1.2E-1 | 5.2E-3 | 8.0E-5 | 3.2E-05 | |
| SR | 1.0E-3 | 2.0E+1 | 1.2E+1 | 2.0E+0 | 2.0E+0 | 3.2E-2 | 3.2E-1 | 6.0E-3 | 1.2E+0 | 3.6E-03 | |
| TC | 1.0E-3 | 4.0E+2 | 1.5E+1 | 1.5E+1 | 7.3E+0 | 4.0E-4 | 1.2E-1 | 4.0E-2 | 1.2E+1 | 4.2E-02 | |
| TH | 1.0E-3 | 4.0E-2 | 3.0E-3 | 2.1E-3 | 3.4E-4 | 4.0E-4 | 1.6E-2 | 2.0E-5 | 8.0E-3 | 4.5E-06 | |
| U | 1.0E-3 | 8.5E-2 | 1.4E-1 | 4.0E-2 | 1.3E-2 | 1.2E-3 | 4.8E+0 | 2.4E-3 | 4.0E+0 | 3.1E-04 | |
| Y | 1.0E-3 | 1.5E-1 | 6.0E-2 | 6.0E-2 | 6.0E-2 | 4.0E-3 | 4.0E-2 | 8.0E-5 | 8.0E-3 | 4.0E-03 | |

[Figure 7](#). Listing of FTRANSC.TXT File

External dose factors for air submersion, water surface, soil surface, deep soil, and buried waste for different radionuclides are given in GRDF.DAT. This file is replaced by GRDFNEW.DAT, which is the output of the AMR, Dose Conversion Factor Analysis (ANL-MGR-MD-000002) (CRWMS M&O 1999h). The file GRDFNEW.DAT, as listed in [Figure 4](#) in Section 4.1.1, is used for both the Reasonable Representation and the Bounding Representation analyses.

4.2 CRITERIA

4.2.1 Assessment Scenario

The BDCFs developed in this analysis will be used in the TSPA for calculating the potential radiation dose to an individual who lives in the vicinity of Yucca Mountain. The assessment scenario is defined such that the calculated BDCFs reflect the characteristics of the critical group and can be incorporated into the TSPA for dose calculations. The following is a description of the assessment scenario.

An individual lives in the vicinity of Yucca Mountain and draws untreated ground water for drinking water supply. This individual also uses the ground water to irrigate crops and lawns

and raise livestock. It is assumed that the groundwater is contaminated by various radionuclides, as specified in the following section. As a result, this individual will be exposed to radiation resulting from ingestion of contaminated water, as well as locally produced food; inhalation of resuspended dust; and direct external exposure to contaminated soil. The BDCF is the radiation dose to this individual due to unit radionuclide concentration in groundwater for a radionuclide of interest. The ground water concentration unit used for this analysis is pCi/L, and the dose to be calculated is the Total Effective Dose Equivalent, or TEDE (mrem/yr). The TEDE is defined as the sum of the deep-dose equivalent (for external exposures) and the 50-year committed effective dose equivalent (for internal exposures) (10 CFR 20).

4.2.2 Radionuclides of Interest

The radionuclides of interest are defined by the Performance Assessment Operations (PAO) via an AP-3.14Q Input transmittal, *Radionuclides of Interest for the Development of BDCFs* (R&E-PA-99217.Tc) (CRWMS M&O 1999j). For the Non-disruptive event biosphere dose assessment, these radionuclides are C-14, Tc-99, I-129, Ac-227, Th-229, U-232, U-233, U-234, U-236, U-238, Np-237, Pu-238, Pu-239, Pu-240, Am-241, and Am-243. A BDCF will be generated for each of these radionuclides separately.

4.2.3 Prior Irrigation Time Periods

The prior irrigation time periods are the number of years that the land has been irrigated before the intake occurs. In order to use the BDCFs in the multiple realizations of the TSPA's RIP code to predict radiation dose from contaminated ground water to a receptor of interest, the Performance Assessment Operations (PAO) requested that a set of BDCFs be calculated for each of the radionuclides of interest at each of six prior irrigation time periods (PR-R&E-99251.R) (CRWMS M&O 1999k). These time periods are provided in [Table 3](#).

4.3 CODES AND STANDARDS

There are no applicable standards at this time. The Nuclear Regulatory Commission has proposed regulatory standard (10 CFR 63 draft) for a potential repository at Yucca Mountain (see Federal Register for February 22, 1999, 64 FR 8640). Until the final rulemaking for 10 CFR 63 is completed, the interim guidance provided by DOE (Dyer 1999) is followed.

Table 3. Prior Irrigation Time Periods

| Radionuclide | Period Number | | | | | |
|---|---------------|------|-------|------|-------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Number of Years of Prior Irrigation for Reasonable Representation | | | | | | |
| C-14 | 0 | 752 | 1674 | 2864 | 4537 | 7401 |
| Tc-99 | 0 | 1 | 2 | 3 | 4 | 5 |
| I-129 | 0 | 1 | 2 | 3 | 4 | 5 |
| Ac-227 | 0 | 6 | 13 | 22 | 35 | 56 |
| Th-229 | 0 | 858 | 1910 | 3269 | 5179 | 8448 |
| U-232 | 0 | 9 | 21 | 36 | 57 | 93 |
| U-233 | 0 | 9 | 21 | 36 | 57 | 93 |
| U-234 | 0 | 9 | 21 | 36 | 57 | 93 |
| U-236 | 0 | 9 | 21 | 36 | 57 | 93 |
| U-238 | 0 | 9 | 21 | 36 | 57 | 93 |
| Np-237 | 0 | 1 | 3 | 5 | 8 | 14 |
| Pu-238 | 0 | 23 | 51 | 88 | 139 | 227 |
| Pu-239 | 0 | 148 | 329 | 563 | 893 | 1456 |
| Pu-240 | 0 | 148 | 329 | 563 | 893 | 1456 |
| Am-241 | 0 | 114 | 253 | 432 | 685 | 1117 |
| Am-243 | 0 | 511 | 1138 | 1947 | 3084 | 5031 |
| Number of Years of Prior Irrigation for Bounding Representation | | | | | | |
| C-14 | 0 | 1504 | 3346 | 5720 | 9066 | - |
| Tc-99 | 0 | 4 | 10 | 17 | 26 | 43 |
| I-129 | 0 | 22 | 49 | 83 | 131 | 214 |
| Ac-227 | 0 | 6 | 13 | 22 | 35 | 56 |
| Th-229 | 0 | 1930 | 4294 | 7340 | 11634 | - |
| U-232 | 0 | 19 | 42 | 72 | 114 | 186 |
| U-233 | 0 | 591 | 1315 | 2250 | 3565 | 5815 |
| U-234 | 0 | 591 | 1315 | 2250 | 3565 | 5815 |
| U-236 | 0 | 591 | 1315 | 2250 | 3565 | 5815 |
| U-238 | 0 | 591 | 1315 | 2250 | 3565 | 5815 |
| Np-237 | 0 | 105 | 233 | 398 | 631 | 1029 |
| Pu-238 | 0 | 23 | 51 | 88 | 139 | 227 |
| Pu-239 | 0 | 6329 | 14078 | - | - | - |
| Pu-240 | 0 | 1719 | 3824 | 6537 | 10361 | - |
| Am-241 | 0 | 114 | 253 | 432 | 685 | 1117 |
| Am-243 | 0 | 1941 | 4317 | 7380 | 11697 | - |

5. ASSUMPTIONS

Not Applicable (N/A).

6. ANALYSIS

GENII-S is a successor to a Pacific Northwest Laboratories code, GENII. GENII, which is available from the Radiation Safety Information Computational Center (RSICC) as code CCC-601, was developed to incorporate the internal dosimetry models recommended by the International Commission on Radiological Protection, Publication 30 (ICRP-30) into the environmental pathway analysis models used at Hanford. GENII is a coupled system of seven programs and the associated data libraries that comprise the Hanford Dosimetry System (Generation II) to estimate potential radiation doses to individuals or populations from both routine and accidental releases. The programs analyze environmental contamination resulting from both far-field and near-field scenarios and calculate radiation doses to humans. GENII can be used in prospective dose calculations for purposes such as siting facilities, environmental impact statements, and safety analysis reports. GENII-S is essentially the GENII code implemented in a software shell, Sensitivity and UNcertainty analysis SHell (SUNS). As a result, GENII-S has the same core part of GENII with additional capability to perform Monte Carlo simulation. This added feature is a useful tool for identifying important model input parameters and evaluating uncertainty of model output.

The BDCFs are calculated using GENII-S software in this analysis. After the permanent closure of the potential repository, the engineered systems within the repository will eventually lose their abilities to contain radionuclide inventory, and the radionuclides will migrate through the geosphere and eventually enter the local water table moving toward inhabited areas. The primary release scenario is a groundwater well used for drinking water supply and irrigation, and this analysis takes this postulated releases and follows them through various pathways until they result in a dose to a receptor of interest. The pathways considered in this assessment are inhalation, ingestion, and direct exposure.

This analysis is divided in two categories: the Reasonable Representation and the Bounding Representation. Both categories use the same scenario but different input data, as described in Section 4 of this document. For the Reasonable Representation analysis, the corresponding input data are incorporated into the GENII-S software, and stochastic runs are performed to propagate the uncertainties of input parameters into the output BDCFs. The number of realizations is set to 130, which is the maximum that the software can perform due to the computing limitation.

For the Bounding Representation analysis, the conservative bounding values (i.e., the Bounding Representation input data) will be used as inputs to run the GENII-S software. Deterministic runs are conducted to calculate the conservative bounding BDCFs. Because each of the input parameters is presented as a conservative bounding value, uncertainty is not an applicable issue for the Bounding Representation analysis.

Since the software used in this analysis is qualified, the qualification status of the output BDCFs depends upon the qualification status of the input data. Until the input data are qualified, the BDCFs generated in this analysis have to be marked as To Be Verified (TBV).

Reasonable Representation

A BDCF is calculated for each of the radionuclides of interest at each of the prior irrigation time periods. The input and output files are named using the following conventions:

RRtXXXX.*

The 1st and 2nd space: RR = Reasonable Representation

The 3rd space: t = Prior irrigation time period, i.e., 1 to 6, as listed in Section 4.2.3

The 4th to 8th space: XXXXX = Radionuclides of interest, e.g., Np237, as listed in Section 4.2.2

Input file extension *: * = ".flg", ".inp", ".pti", and ".vec"

Output file extension: ".rst" and ".out"

For each set of input data, the files with extension ".flg", ".inp", ".pti", and ".vec" are used by the GENII-S code to store the input data, and they must be used together for computer runs. For example, the input data files "RR1Np237.*" (a total of 4 files) are the input data set for calculating the Reasonable Representation BDCF for Np-237 at prior irrigation time period 1.

The output files has extension ".rst". For example, "RR1Np237.rst" contains the results of the stochastic run for the Reasonable Representation BDCF for Np-237 at prior irrigation time period 1. The ".rst" files will be used in the follow-on AMR analyses such as the sensitivity analysis, the distribution fit, and the BDCF abstraction AMRs. The ".out" files contain no data for stochastic runs. For the Reasonable Representation cases, a total of 96 BDCF data sets are generated as a result of this analysis, and summary results are provided in Section 7, Conclusions, of this document.

Bounding Representation

The Bounding Representation analysis is similar to the Reasonable Representation analysis. The input and output files are named using the following conventions:

SCtXXXX.*

The 1st and 2nd space: SC = Bounding Representation

The 3rd space: t = Prior irrigation time period, i.e., 1 to 6, as listed in Section 4.2.3

The 4th to 8th space: XXXXX = Radionuclides of interest, e.g., Np237, as listed in Section 4.2.2

Input file extension *: * = ".flg", ".inp", ".pti", and ".vec"

Output file extension: ".out"

For each set of input data, the files with extension ".flg", ".inp", ".pti", and ".vec" are used by the GENII-S code to store the input data, and they must be used together for computer runs. For example, the input data files "SC1Np237.*" (a total of 4 files) are the input data set for calculating the Bounding Representation BDCF for Np-237 at prior irrigation time period 1.

The output files has extension “.out”. For example, "SC1Np237.out" contains the results of the deterministic run for the Bounding Representation BDCF for Np-237 at prior irrigation time period 1. For the Bounding Representations, a total of 89 BDCFs are generated in this analysis, and the results are provided in Section 7, Conclusions, of this document.

7. CONCLUSIONS

The results of this analysis include computer input and output files. Due to the large volume of the data files, they are put on a CD-ROM as an attachment of this document. Attachment III provides a list of files stored on the CD-ROM. The BDCFs generated in this AMR are summarized in [Table 4](#) and [5](#) for the Reasonable Representation and the Bounding Representation analyses, respectively.

[Table 4. Summary Results of Reasonable Representation BDCFs](#)

| Radionuclide | Irrigation Period | Source File | TEDE | Standard Deviation |
|--------------|-------------------|--------------|--------------------------------|--------------------|
| | | | mrem/yr per pCi/L ¹ | |
| Ac-227 | 1 | RR1AC227.RST | 1.81E+01 | 3.08E+00 |
| | 2 | RR2AC227.RST | 1.81E+01 | 3.07E+00 |
| | 3 | RR3AC227.RST | 1.81E+01 | 3.07E+00 |
| | 4 | RR4AC227.RST | 1.82E+01 | 3.08E+00 |
| | 5 | RR5AC227.RST | 1.82E+01 | 3.08E+00 |
| | 6 | RR6AC227.RST | 1.82E+01 | 3.08E+00 |
| Am-241 | 1 | RR1AM241.RST | 4.65E+00 | 7.88E-01 |
| | 2 | RR2AM241.RST | 4.74E+00 | 7.89E-01 |
| | 3 | RR3AM241.RST | 4.82E+00 | 7.92E-01 |
| | 4 | RR4AM241.RST | 4.90E+00 | 7.95E-01 |
| | 5 | RR5AM241.RST | 4.97E+00 | 7.97E-01 |
| | 6 | RR6AM241.RST | 5.04E+00 | 8.02E-01 |
| Am-243 | 1 | RR1AM243.RST | 4.64E+00 | 7.87E-01 |
| | 2 | RR2AM243.RST | 5.29E+00 | 8.03E-01 |
| | 3 | RR3AM243.RST | 5.92E+00 | 8.53E-01 |
| | 4 | RR4AM243.RST | 6.50E+00 | 9.14E-01 |
| | 5 | RR5AM243.RST | 7.04E+00 | 9.78E-01 |
| | 6 | RR6AM243.RST | 7.50E+00 | 1.05E+00 |
| C-14 | 1 | RR1C14.RST | 4.06E-03 | 2.48E-04 |
| | 2 | RR2C14.RST | 4.06E-03 | 2.48E-04 |
| | 3 | RR3C14.RST | 4.06E-03 | 2.48E-04 |
| | 4 | RR4C14.RST | 4.06E-03 | 2.48E-04 |
| | 5 | RR5C14.RST | 4.06E-03 | 2.48E-04 |
| | 6 | RR6C14.RST | 4.06E-03 | 2.48E-04 |
| I-129 | 1 | RR1I129.RST | 3.61E-01 | 6.86E-02 |
| | 2 | RR2I129.RST | 3.62E-01 | 6.87E-02 |
| | 3 | RR3I129.RST | 3.62E-01 | 6.88E-02 |
| | 4 | RR4I129.RST | 3.62E-01 | 6.88E-02 |
| | 5 | RR5I129.RST | 3.62E-01 | 6.88E-02 |
| | 6 | RR6I129.RST | 3.62E-01 | 6.88E-02 |
| Np-237 | 1 | RR1NP237.RST | 6.76E+00 | 1.15E+00 |
| | 2 | RR2NP237.RST | 6.77E+00 | 1.15E+00 |
| | 3 | RR3NP237.RST | 6.78E+00 | 1.15E+00 |

| Radionuclide | Irrigation Period | Source File | TEDE | Standard Deviation |
|--------------|-------------------|--------------|--------------------------------|--------------------|
| | | | mrem/yr per pCi/L ¹ | |
| | 4 | RR4NP237.RST | 6.79E+00 | 1.15E+00 |
| | 5 | RR5NP237.RST | 6.80E+00 | 1.15E+00 |
| | 6 | RR6NP237.RST | 6.82E+00 | 1.15E+00 |
| Pu-238 | 1 | RR1PU238.RST | 4.11E+00 | 6.97E-01 |
| | 2 | RR2PU238.RST | 4.12E+00 | 6.98E-01 |
| | 3 | RR3PU238.RST | 4.14E+00 | 6.97E-01 |
| | 4 | RR4PU238.RST | 4.15E+00 | 6.97E-01 |
| | 5 | RR5PU238.RST | 4.16E+00 | 6.97E-01 |
| | 6 | RR6PU238.RST | 4.17E+00 | 6.97E-01 |
| Pu-239 | 1 | RR1PU239.RST | 4.57E+00 | 7.74E-01 |
| | 2 | RR2PU239.RST | 4.66E+00 | 7.75E-01 |
| | 3 | RR3PU239.RST | 4.75E+00 | 7.75E-01 |
| | 4 | RR4PU239.RST | 4.84E+00 | 7.77E-01 |
| | 5 | RR5PU239.RST | 4.94E+00 | 7.79E-01 |
| | 6 | RR6PU239.RST | 5.03E+00 | 7.82E-01 |
| Pu-240 | 1 | RR1PU240.RST | 4.56E+00 | 7.73E-01 |
| | 2 | RR2PU240.RST | 4.65E+00 | 7.74E-01 |
| | 3 | RR3PU240.RST | 4.74E+00 | 7.74E-01 |
| | 4 | RR4PU240.RST | 4.83E+00 | 7.76E-01 |
| | 5 | RR5PU240.RST | 4.92E+00 | 7.78E-01 |
| | 6 | RR6PU240.RST | 5.00E+00 | 7.80E-01 |
| Tc-99 | 1 | RR1TC99.RST | 4.02E-03 | 1.60E-03 |
| | 2 | RR2TC99.RST | 4.07E-03 | 1.68E-03 |
| | 3 | RR3TC99.RST | 4.08E-03 | 1.68E-03 |
| | 4 | RR4TC99.RST | 4.08E-03 | 1.68E-03 |
| | 5 | RR5TC99.RST | 4.08E-03 | 1.68E-03 |
| | 6 | RR6TC99.RST | 4.08E-03 | 1.68E-03 |
| Th-229 | 1 | RR1TH229.RST | 4.59E+00 | 7.95E-01 |
| | 2 | RR2TH229.RST | 6.71E+00 | 1.19E+00 |
| | 3 | RR3TH229.RST | 8.67E+00 | 1.84E+00 |
| | 4 | RR4TH229.RST | 1.04E+01 | 2.49E+00 |
| | 5 | RR5TH229.RST | 1.19E+01 | 3.07E+00 |
| | 6 | RR6TH229.RST | 1.31E+01 | 3.53E+00 |
| U-232 | 1 | RR1U232.RST | 1.71E+00 | 2.91E-01 |
| | 2 | RR2U232.RST | 1.75E+00 | 2.91E-01 |
| | 3 | RR3U232.RST | 1.81E+00 | 2.92E-01 |
| | 4 | RR4U232.RST | 1.86E+00 | 2.94E-01 |
| | 5 | RR5U232.RST | 1.91E+00 | 2.95E-01 |
| | 6 | RR6U232.RST | 1.94E+00 | 2.96E-01 |
| U-233 | 1 | RR1U233.RST | 3.77E-01 | 6.40E-02 |
| | 2 | RR2U233.RST | 3.79E-01 | 6.40E-02 |
| | 3 | RR3U233.RST | 3.81E-01 | 6.41E-02 |
| | 4 | RR4U233.RST | 3.83E-01 | 6.43E-02 |
| | 5 | RR5U233.RST | 3.85E-01 | 6.45E-02 |

| Radionuclide | Irrigation Period | Source File | TEDE | Standard Deviation |
|--------------|-------------------|-------------|--------------------------------|--------------------|
| | | | mrem/yr per pCi/L ¹ | |
| | 6 | RR6U233.RST | 3.88E-01 | 6.49E-02 |
| U-234 | 1 | RR1U234.RST | 3.70E-01 | 6.28E-02 |
| | 2 | RR2U234.RST | 3.72E-01 | 6.29E-02 |
| | 3 | RR3U234.RST | 3.74E-01 | 6.29E-02 |
| | 4 | RR4U234.RST | 3.76E-01 | 6.32E-02 |
| | 5 | RR5U234.RST | 3.78E-01 | 6.33E-02 |
| | 6 | RR6U234.RST | 3.80E-01 | 6.36E-02 |
| U-236 | 1 | RR1U236.RST | 3.51E-01 | 5.95E-02 |
| | 2 | RR2U236.RST | 3.53E-01 | 5.96E-02 |
| | 3 | RR3U236.RST | 3.55E-01 | 5.96E-02 |
| | 4 | RR4U236.RST | 3.56E-01 | 5.99E-02 |
| | 5 | RR5U236.RST | 3.58E-01 | 6.00E-02 |
| | 6 | RR6U236.RST | 3.60E-01 | 6.03E-02 |
| U-238 | 1 | RR1U238.RST | 3.39E-01 | 5.81E-02 |
| | 2 | RR2U238.RST | 3.41E-01 | 5.81E-02 |
| | 3 | RR3U238.RST | 3.44E-01 | 5.82E-02 |
| | 4 | RR4U238.RST | 3.46E-01 | 5.84E-02 |
| | 5 | RR5U238.RST | 3.49E-01 | 5.85E-02 |
| | 6 | RR6U238.RST | 3.52E-01 | 5.89E-02 |

Note: 1. Computer outputs are in rem/yr per pCi/L.

Table 5. Summary Results of Bounding Representation BDCFs

| Radionuclide | Irrigation Period | Source File | TEDE |
|--------------|-------------------|----------------|--------------------------------|
| | | | mrem/yr per pCi/L ¹ |
| Ac-227 | 1 | SC1AC227.OUT | 2.30E+02 |
| | 2 | SC2AC227.OUT | 2.40E+02 |
| | 3 | SC3AC227.OUT | 2.40E+02 |
| | 4 | SC4AC227.OUT | 2.40E+02 |
| | 5 | SC5AC227.OUT | 2.40E+02 |
| | 6 | SC6AC227.OUT | 2.50E+02 |
| Am-241 | 1 | SC1AM241.OUT | 5.80E+01 |
| | 2 | SC2AM241.OUT | 6.80E+01 |
| | 3 | SC3AM241.OUT | 7.40E+01 |
| | 4 | SC4AM241.OUT | 8.50E+01 |
| | 5 | SC5AM241.OUT | 9.10E+01 |
| | 6 | SC6AM241.OUT | 1.00E+02 |
| Am-243 | 1 | SC1AM243.OUT | 5.70E+01 |
| | 2 | SC2AM243.OUT | 2.10E+02 |
| | 3 | SC3AM243.OUT | 3.70E+02 |
| | 4 | SC4AM243.OUT | 5.30E+02 |
| | 5 | SC5AM243.OUT | 7.20E+02 |
| | 6 | - | - |
| C-14 | 1 | SC1C14.OUT | 3.60E-02 |
| | 2 | SC2C14.OUT | 3.60E-02 |
| | 3 | SC3C14.OUT | 3.60E-02 |
| | 4 | SC4C14.OUT | 3.60E-02 |
| | 5 | SC5C14.OUT | 3.60E-02 |
| | 6 | - ² | - |
| I-129 | 1 | SC1I129.OUT | 1.40E+01 |
| | 2 | SC2I129.OUT | 2.00E+01 |
| | 3 | SC3I129.OUT | 2.60E+01 |
| | 4 | SC4I129.OUT | 3.20E+01 |
| | 5 | SC5I129.OUT | 3.80E+01 |
| | 6 | SC6I129.OUT | 4.40E+01 |
| Np-237 | 1 | SC1NP237.OUT | 9.60E+01 |
| | 2 | SC2NP237.OUT | 1.60E+02 |
| | 3 | SC3NP237.OUT | 2.20E+02 |
| | 4 | SC4NP237.OUT | 2.90E+02 |
| | 5 | SC5NP237.OUT | 3.60E+02 |
| | 6 | SC6NP237.OUT | 4.30E+02 |
| Pu-238 | 1 | SC1PU238.OUT | 5.10E+01 |
| | 2 | SC2PU238.OUT | 5.50E+01 |
| | 3 | SC3PU238.OUT | 5.50E+01 |
| | 4 | SC4PU238.OUT | 5.60E+01 |
| | 5 | SC5PU238.OUT | 5.60E+01 |
| | 6 | SC6PU238.OUT | 6.00E+01 |
| Pu-239 | 1 | SC1PU239.OUT | 5.60E+01 |
| | 2 | SC2PU239.OUT | 4.30E+01 |

| Radionuclide | Irrigation Period | Source File | TEDE |
|--------------|-------------------|--------------|--------------------------------|
| | | | mrem/yr per pCi/L ¹ |
| | 3 | SC3PU239.OUT | 7.40E+02 |
| | 4 | - | - |
| | 5 | - | - |
| | 6 | - | - |
| Pu-240 | 1 | SC1PU240.OUT | 5.60E+01 |
| | 2 | SC2PU240.OUT | 1.60E+02 |
| | 3 | SC3PU240.OUT | 2.60E+02 |
| | 4 | SC4PU240.OUT | 3.60E+02 |
| | 5 | SC5PU240.OUT | 4.50E+02 |
| | 6 | - | - |
| Tc-99 | 1 | SC1TC99.OUT | 1.00E+00 |
| | 2 | SC2TC99.OUT | 4.30E+00 |
| | 3 | SC3TC99.OUT | 8.40E+00 |
| | 4 | SC4TC99.OUT | 1.20E+01 |
| | 5 | SC5TC99.OUT | 1.50E+01 |
| | 6 | SC6TC99.OUT | 1.90E+01 |
| Th-229 | 1 | SC1TH229.OUT | 5.90E+01 |
| | 2 | SC2TH229.OUT | 3.60E+02 |
| | 3 | SC3TH229.OUT | 6.50E+02 |
| | 4 | SC4TH229.OUT | 9.40E+02 |
| | 5 | SC5TH229.OUT | 1.20E+03 |
| | 6 | - | |
| U-232 | 1 | SC1U232.OUT | 2.50E+01 |
| | 2 | SC2U232.OUT | 2.90E+01 |
| | 3 | SC3U232.OUT | 3.20E+01 |
| | 4 | SC4U232.OUT | 3.60E+01 |
| | 5 | SC5U232.OUT | 3.90E+01 |
| | 6 | SC6U232.OUT | 4.10E+01 |
| U-233 | 1 | SC1U233.OUT | 5.60E+00 |
| | 2 | SC2U233.OUT | 2.00E+01 |
| | 3 | SC3U233.OUT | 4.10E+01 |
| | 4 | SC4U233.OUT | 7.10E+01 |
| | 5 | SC5U233.OUT | 1.20E+02 |
| | 6 | SC6U233.OUT | 2.00E+02 |
| U-234 | 1 | SC1U234.OUT | 5.50E+00 |
| | 2 | SC2U234.OUT | 1.80E+01 |
| | 3 | SC3U234.OUT | 2.90E+01 |
| | 4 | SC4U234.OUT | 4.10E+01 |
| | 5 | SC5U234.OUT | 5.30E+01 |
| | 6 | SC6U234.OUT | 6.50E+01 |
| U-236 | 1 | SC1U236.OUT | 5.20E+00 |
| | 2 | SC2U236.OUT | 1.70E+01 |
| | 3 | SC3U236.OUT | 2.80E+01 |
| | 4 | SC4U236.OUT | 3.90E+01 |
| | 5 | SC5U236.OUT | 5.00E+01 |
| | 6 | SC6U236.OUT | 6.20E+01 |

| Radionuclide | Irrigation Period | Source File | TEDE |
|--------------|-------------------|-------------|--------------------------------|
| | | | mrem/yr per pCi/L ¹ |
| U-238 | 1 | SC1U238.OUT | 5.00E+00 |
| | 2 | SC2U238.OUT | 1.70E+01 |
| | 3 | SC3U238.OUT | 2.80E+01 |
| | 4 | SC4U238.OUT | 3.90E+01 |
| | 5 | SC5U238.OUT | 5.10E+01 |
| | 6 | SC6U238.OUT | 6.20E+01 |

Note: 1. Computer outputs are in rem/yr per pCi/L.
 2. Not required. See Table 3 in subsection 4.2.3, Prior Irrigation Time Periods.

8. REFERENCES

8.1 DATA CITED

MO9911RIB00064.000. Environmental Transport Parameter Values for Dose Assessment. Submittal date: 11/12/1999.

MO9911RIB00065.000. Parameter Values for Transfer Coefficients. Submittal date: 11/12/1999.

MO9901RIB00061.000. Input Parameter Values for External and Inhalation Radiation Exposure Analysis. Submittal date: 10/07/1999. ACC: MOL19991110.0266.

MO9912RIB00066.000. Parameter Values for Internal and External Dose Conversion Factors. Submittal date: 12/03/1999.

MO9912SPAING06.033. Ingestion Exposure Pathway Parameters. Submittal date: 12/22/1999.

MO9912SPACON05.001. Recommended Distribution-based and Fixed (Mean) Consumption Parameters for Locally Produced Food by Type and Tap Water. Submittal date: 12/13/1999.

SN9912T0512299.001. Leaching Coefficients for GENII-S Code. Submittal date: 12/06/1999.

8.2 DOCUMENTS CITED

CRWMS M&O 1998. *Software Qualification Report (SQR): GENII-S 1.485 Environmental Radiation Dosimetry Software System, Version 1.485 (CSCI: 30034 V1.4.8.5)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19980715.0029.

CRWMS M&O 1999a. *Development Plan for Non-Disruptive Event Biosphere Dose Conversion Factors, Rev. 1 (TDP-MGR-MD-000010)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991029.0319.

CRWMS M&O 1999b. Activity Evaluation: *Scientific Investigation of Radiological Doses in Biosphere*. B00000000-01717-2200-00169 Rev. 4. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991207.0225.

CRWMS M&O 1999e. *Input Parameter Values for External and Inhalation Radiation Exposure Analysis (ANL-MGR-MD-000001)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990923.0235.

CRWMS M&O 1999f. *Transfer Coefficient Analysis (ANL-MGR-MD-000008)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991115.0237.

CRWMS M&O 1999g. *Environmental Transport Parameters Analysis (ANL-MGR-MD-000007)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991115.0238.

CRWMS M&O 1999h. *Dose Conversion Factor Analysis (ANL-MGR-MD-000002)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991207.0215.

CRWMS M&O 1999j. *Design Input Transmittal for Status of Radionuclide Screening for the TSPA-SR. (Input Tracking Number: R&E-PA-99217.Tc.)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991115.0133.

CRWMS M&O 1999k. *Input Request for Biosphere Dose Conversion Factors (BDCFs) To Be Used in the TSPA-SR. (Input Tracking Number: PA-R&E-99251.R)*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990819.0070.

DOE (U.S. Department of Energy) 1998. *Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program. DOE/RW-0333P REV. 8*. Washington, D.C. U.S. Department of Energy. ACC: MOL.19980601.0022.

Dyer, J.R. 1999. "Revised Interim Guidance Pending Issuance of New U.S. Nuclear Regulatory Commission (NRC) Regulations (Revision 01, July 22, 1999), for Yucca Mountain, Nevada." Letter from J.R. Dyer (DOE) to Dr. D.R. Wilkins (CRWMS M&O), September 3, 1999, OL&RC:SB-1714, with enclosure, "Interim Guidance Pending Issuance of New NRC Regulations for Yucca Mountain (Revision 01)." ACC: MOL.19990910.0079.

Leigh, C.D., Thompson, S.D., Campbell, J.E., Longsine, D.E., Kennedy, R.A., and Napier , B.A. 1993. *User's Guide for GENII-S: A Code for Statistical and Deterministic Simulations of Radiation Doses to Humans from Radionuclides in the Environment*. SAND91-0561. Albuquerque, New Mexico: Sandia National Laboratories. TIC 231133.

8.3 CODES, STANDARDS, AND REGULATIONS

10 CFR 20. Energy: Standards for Protection Against Radiation.

8.4 PROCEDURES

AP-2.1Q, Rev. 0, ICN 0. *Indoctrination and Training of Personnel*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990702.0318.

AP-2.2Q, Rev. 0, ICN 0. *Establishment and Verification of Required Education and Experience of Personnel*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990701.0618.

AP-2.13Q, Rev. 0, ICN 0. *Technical Product Development Planning*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990701.0617.

AP-2.14Q, Rev. 0, ICN 0. *Review of Technical Products*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990701.0616.

AP-3.4Q, Rev. 1, ICN 1. *Level 3 Change Control*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19991117.0140.

AP-3.10Q, Rev. 1, ICN 0. *Analyses and Models*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19991019.0467.

AP-3.14Q, Rev. 0, ICN 0. *Transmittal of Input*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990701.0621.

AP-3.15Q, Rev. 1, ICN 0. *Managing Technical Product Inputs*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19991214.0623.

AP-6.1Q, Rev. 3, ICN 0. *Controlled Documents*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990702.0309.

AP-17.1Q, Rev. 1, ICN 1 *Record Source Responsibilities for Inclusionary Records*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990902.0444.

AP-SI.1Q, Rev.2 ICN 2 *Software Management*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19991214.0627.

AP-SIII.2Q, Rev. 0, ICN 0. *Qualification of Unqualified Data and the Documentation of Rationale for Accepted Data*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19990702.0308.

AP-SIII.3Q, Rev. 0, ICN 2 *Submittal and Incorporation of Data to the Technical Data Management System*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19991214.0632.

AP-SIII.4Q, Rev. 0, ICN 1. *Development, Review, Online Placement, and Maintenance of Individual Reference Information Base Data Items*. Washington, D.C.: U.S. Department of Energy, Office of Civilian Radioactive Waste Management. ACC: MOL.19991214.0631.

QAP-2-0, Rev. 5. *Conduct of Activities*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19980826.0209.

QAP-2-3. Rev. 10. *Classification of Permanent Items*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19990806.0070.

NLP-2-0. Rev. 5. *Determination of Importance Evaluations*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19981116.0120.

YAP-SV.1Q. Rev. 0, ICN 1. *Control of the Electronic Management of Data*. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991008.0209.

ATTACHMENT I. DOCUMENT INPUT REFERENCE SHEETS

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|---|--------------|--|-------------------------|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 2a | | | | | | | | | |
| 1. | MO9912SPAING06.033. Ingestion Exposure Pathway Parameters. Submittal date: 12/22/1999. | Entire | TBV-3958 | 4.1 Data and Parameters | Parameter Values for: Eggs Grow Time Beef Grow time Milk Grow Time Leafy Vegetables Holdup Other (Root) Vegetables holdup Fruit Holdup Grain Holdup Poultry Holdup Eggs Holdup Beef Holdup Milk Holdup Poultry - Feed Storage time Eggs - Feed Storage Time Beef - Feed Storage Time Milk - Feed Storage Time Poultry - Dietary Fraction Eggs - Dietary Fraction Beef - Dietary Fraction Milk - Dietary Fraction Reason for TBV: AMR pending approval. | 1 | x | N/A | x |

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET**

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|--|--------------|--|-------------------------|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 2. | MO9912SPACON05.001. Recommended Distribution-based and Fixed (Mean) Consumption Parameters for Locally Produced Food by Type and Tap Water. Submittal date: 12/13/1999. | Entire | TBV-3957 | 4.1 Data and Parameters | Parameter Values for: Leafy Vegetable Consumption Rate Root Vegetable Consumption Rate Grains Consumption Rate Fruit Consumption Rate Poultry Consumption Rate Meat Consumption Rate Fish Consumption Rate Eggs Consumption Rate Milk Consumption Rate Tap Water Consumption Rate Reason for TBV: AMR pending approval. | 1 | x | N/A | x |

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET**

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|---|--------------|--|-------------------------|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 3. | MO9910RIB00061.000. Input Parameter Values for External and Inhalation Radiation Exposure Analysis. Submittal date: 10/7/99. | Entire | Qualified | 4.1 Data and Parameters | Parameter Values for: Exposure from Inhalation: Mass Loading (grams/m ³) Inhalation Exposure Time (hours/year) Chronic Breathing Rate (m ³ /day) External Ground Exposure: Soil Exposure Time (hours/year) Home Irrigation Rate (inches/year) Duration of Home Irrigation (months/year) | N/A | N/A | N/A | N/A |
| 4. | MO9911RIB00065.000. Parameter Values for Transfer Coefficients. Submittal date: 11/12/99 | Entire | Qualified | 4.1 Data and Parameters | Parameter Values for: Transfer parameter values in input data file FTRANS.DAT Soil-to-plant transfer scale factor Animal uptake scale factor | N/A | N/A | N/A | N/A |

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET**

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|---|------------|--------------|--|--------------------|--|---------------------|--------------------------|--------------|-----|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | 3. Section | Unqual. | | | | | From Uncontrolled Source | Un-confirmed | |
| 5. MO9911RIB00064.000. Environmental Transport Parameters for Dose Assessment. Submittal date: 11/12/99. | Entire | Qualified | 4.1 Data and Paramete rs | | Parameter values in input file DEFAULT.IN Deposition velocity (m/sec) in FTRANS.DAT Resuspension factor (1/m) Fraction of plant roots in surface soil Fraction of plant roots in deep soil Surface soil density (kg/m ²): soil mass per unit area for surface soil Deep soil density (kg/m ³): soil mass per unit volume for deep soil Soil ingestion rate (mg/day) | N/A | N/A | N/A | N/A |
| 6. MO9911RIB00066.000. Parameter Values for Internal and External Dose Conversion Factors. Submittal date: 11/12/99. | Entire | Qualified | 4.1 Data and Paramete rs | | External dose conversion factors data file, GRDF.DAT Internal dose conversion factors data file, DOSINC.DAT | N/A | N/A | N/A | N/A |
| 7. SN9912T0512299.001. Leaching Coefficients for GENII-S Code. Submittal date: 12/06/99. | Entire | TBV- 3956 | 4.1 Data and Paramete rs | | Leaching factors in input data file, FTRANS.DAT Reason for TBV: AMR pending approval. | 1 | x | N/A | x |

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET**

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|--|--------------|--|--------------------|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | | 4. Input Status | 5. Section Used In | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 8. | CRWMS M&O 1998. <i>Software Qualification Report (SQR): GENII-S 1.485 Environmental Radiation Dosimetry Software System, Version 1.485 (CSCI: 30034 V1.4.8.5)</i> . Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19980715.0029. | Entire | Qualified | 3. | Documents usage of qualified software. | N/A | N/A | N/A | N/A |
| 9. | CRWMS M&O 1999a. <i>Development Plan for Non-Disruptive Event Biosphere Dose Conversion Factors, Rev. 1 (TDP-MGR-MD-000010)</i> . Las Vegas, Nevada: CRWMS M&O. ACC: TBD | Entire | N/A Reference only. | 1. | Development plan for this analysis. | N/A | N/A | N/A | N/A |
| 10. | CRWMS M&O 1999b. Activity Evaluation: <i>Scientific Investigation of Radiological Doses in Biosphere. B00000000-01717-2200-00169. Rev. 4.</i> Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991207.0225. | Entire | N/A Reference only. | 2. | Activity evaluation for this analysis. | N/A | N/A | N/A | N/A |

**OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET**

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | |
|--|------------|------------------------|--|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 11. DOE (U.S. Department of Energy) 1998. <i>Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program.</i> DOE/RW-0333P REV. 8. Washington, D.C. U.S. Department of Energy. ACC:MOL.19980601.0022. | Entire | N/A Reference only. | 2. | Quality Assurance requirements. | N/A | N/A | N/A | N/A |
| 12. Leigh, C.D., Thompson, S.D., Campbell, J.E., Longsine, D.E., Kennedy, R.A., and Napier, B.A. 1993. <i>User's Guide for GENII-S: A Code for Statistical and Deterministic Simulations of Radiation Doses to Humans from Radionuclides in the Environment.</i> SAND91-0561. Albuquerque, New Mexico: Sandia National Laboratories. TIC 231133. | Entire | N/A Reference only. | 3. | Provides general information on the software used in the analysis. | N/A | N/A | N/A | N/A |
| 13. 10 CFR 20. Energy: Standards for Protection Against Radiation. | 20.1003 | N/A Reference only. | 4.2.1 | Provides definition of the TEDE. | N/A | N/A | N/A | N/A |

AP-3.15Q.1

Rev. 06/30/199

ATTACHMENT II. ACRONYMS AND ABBREVIATIONS

Acronyms

| | |
|---------|---|
| AMR | Analysis and Model Report |
| BDCF | Biosphere Dose Conversion Factor |
| CRWMS | Civilian Radioactive Waste Management System |
| DTN | Data Tracking Number |
| ICRP-30 | International Commission on Radiological Protection, Publication 30 |
| M&O | Management and Operating |
| NCRP | National Council on Radiation Protection and Measurement |
| OCRWM | Office of Civilian Radioactive Waste Management |
| PAO | Performance Assessment Organization |
| PMR | Process Model Report |
| RSICC | Radiation Safety Information Computational Center |
| TBV | To Be Verified |
| TDMS | Technical Data Management System |
| TEDE | Total Effective Dose Equivalent |
| TSPA | Total System Performance Assessment |

Abbreviations

| | |
|---------|--------------------|
| Ac | Actinium |
| Am | Americium |
| C | Carbon |
| I | Iodine |
| mrem/yr | milli-rem per year |

| | |
|-------|----------------------|
| Np | Neptunium |
| pCi/L | pico Curie per liter |
| Pu | Plutonium |
| Tc | Technetium |
| Th | Thorium |
| U | Uranium |

ATTACHMENT III. LIST OF FILES ON CD-ROM

..\ (root directory)

| | | | |
|--------|-----|--------|--------------|
| README | DOC | 22,000 | 1/4/00 1:35p |
|--------|-----|--------|--------------|

..\RR_data\ (input and output files for Reasonable Representation analysis)

| | | | | |
|----------|-----|--------|----------|----------|
| RR1AC227 | FLG | 712 | 01/09/00 | 12:55:18 |
| RR1AC227 | INP | 15447 | 01/09/00 | 12:55:28 |
| RR1AC227 | OUT | 832 | 01/09/00 | 12:55:52 |
| RR1AC227 | PTI | 8173 | 01/09/00 | 12:55:52 |
| RR1AC227 | RST | 112189 | 01/09/00 | 12:56:26 |
| RR1AC227 | VEC | 38112 | 01/09/00 | 12:55:52 |
| RR1AM241 | FLG | 712 | 01/08/00 | 16:10:14 |
| RR1AM241 | INP | 15447 | 01/08/00 | 16:10:14 |
| RR1AM241 | OUT | 832 | 12/28/99 | 18:55:02 |
| RR1AM241 | PTI | 8173 | 12/28/99 | 18:55:02 |
| RR1AM241 | RST | 112189 | 01/08/00 | 16:12:52 |
| RR1AM241 | VEC | 38112 | 12/28/99 | 18:55:02 |
| RR1AM243 | FLG | 712 | 01/08/00 | 16:27:38 |
| RR1AM243 | INP | 15447 | 01/08/00 | 16:27:48 |
| RR1AM243 | OUT | 832 | 01/08/00 | 16:28:12 |
| RR1AM243 | PTI | 8173 | 01/08/00 | 16:28:12 |
| RR1AM243 | RST | 112189 | 01/08/00 | 16:29:08 |
| RR1AM243 | VEC | 38112 | 01/08/00 | 16:28:12 |
| RR1C14 | FLG | 710 | 01/08/00 | 16:47:28 |
| RR1C14 | INP | 15447 | 01/08/00 | 16:47:38 |
| RR1C14 | OUT | 832 | 01/08/00 | 16:47:56 |
| RR1C14 | PTI | 8173 | 01/08/00 | 16:47:56 |
| RR1C14 | RST | 112187 | 01/08/00 | 16:51:54 |
| RR1C14 | VEC | 38112 | 01/08/00 | 16:47:56 |
| RR1I129 | FLG | 712 | 01/08/00 | 17:01:50 |
| RR1I129 | INP | 15447 | 01/08/00 | 17:02:00 |
| RR1I129 | OUT | 832 | 01/08/00 | 17:02:16 |
| RR1I129 | PTI | 8173 | 01/08/00 | 17:02:16 |
| RR1I129 | RST | 112188 | 01/08/00 | 17:03:06 |
| RR1I129 | VEC | 38112 | 01/08/00 | 17:02:16 |
| RR1NP237 | FLG | 712 | 01/08/00 | 17:11:30 |
| RR1NP237 | INP | 15447 | 01/08/00 | 17:11:40 |
| RR1NP237 | OUT | 832 | 01/08/00 | 17:11:58 |
| RR1NP237 | PTI | 8173 | 01/08/00 | 17:11:58 |
| RR1NP237 | RST | 112189 | 01/08/00 | 17:12:56 |
| RR1NP237 | VEC | 38112 | 01/08/00 | 17:11:58 |
| RR1PU238 | FLG | 712 | 01/08/00 | 19:44:42 |
| RR1PU238 | INP | 15447 | 01/08/00 | 19:44:54 |
| RR1PU238 | OUT | 832 | 01/08/00 | 19:45:12 |
| RR1PU238 | PTI | 8173 | 01/08/00 | 19:45:12 |
| RR1PU238 | RST | 112189 | 01/08/00 | 19:46:44 |
| RR1PU238 | VEC | 38112 | 01/08/00 | 19:45:12 |
| RR1PU239 | FLG | 712 | 01/08/00 | 17:52:20 |
| RR1PU239 | INP | 15447 | 01/08/00 | 17:52:30 |
| RR1PU239 | OUT | 832 | 01/08/00 | 17:52:48 |
| RR1PU239 | PTI | 8173 | 01/08/00 | 17:52:48 |
| RR1PU239 | RST | 112189 | 01/08/00 | 17:53:56 |
| RR1PU239 | VEC | 38112 | 01/08/00 | 17:52:48 |
| RR1PU240 | FLG | 712 | 01/08/00 | 19:54:56 |
| RR1PU240 | INP | 15447 | 01/08/00 | 19:56:28 |
| RR1PU240 | OUT | 832 | 01/08/00 | 19:56:48 |
| RR1PU240 | PTI | 8173 | 01/08/00 | 19:56:48 |
| RR1PU240 | RST | 112189 | 01/08/00 | 19:57:22 |

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|----------|-----|--------|----------|----------|
| RR1PU240 | VEC | 38112 | 01/08/00 | 19:56:48 |
| RR1TC99 | FLG | 711 | 01/08/00 | 18:13:02 |
| RR1TC99 | INP | 15447 | 01/08/00 | 18:13:12 |
| RR1TC99 | OUT | 832 | 01/08/00 | 18:13:28 |
| RR1TC99 | PTI | 8173 | 01/08/00 | 18:13:28 |
| RR1TC99 | RST | 112188 | 01/08/00 | 18:14:24 |
| RR1TC99 | VEC | 38112 | 01/08/00 | 18:13:28 |
| RR1TH229 | FLG | 712 | 01/08/00 | 18:22:08 |
| RR1TH229 | INP | 15447 | 01/08/00 | 18:22:18 |
| RR1TH229 | OUT | 832 | 01/08/00 | 18:22:40 |
| RR1TH229 | PTI | 8173 | 01/08/00 | 18:22:40 |
| RR1TH229 | RST | 112189 | 01/08/00 | 18:23:46 |
| RR1TH229 | VEC | 38112 | 01/08/00 | 18:22:40 |
| RR1U232 | FLG | 712 | 01/08/00 | 18:48:46 |
| RR1U232 | INP | 15447 | 01/08/00 | 18:48:58 |
| RR1U232 | OUT | 1000 | 01/08/00 | 18:49:30 |
| RR1U232 | PTI | 8173 | 01/08/00 | 18:49:30 |
| RR1U232 | RST | 112188 | 01/08/00 | 18:50:40 |
| RR1U232 | VEC | 38112 | 01/08/00 | 18:49:30 |
| RR1U233 | FLG | 712 | 01/08/00 | 19:00:14 |
| RR1U233 | INP | 15447 | 01/08/00 | 19:00:22 |
| RR1U233 | OUT | 832 | 01/08/00 | 19:00:48 |
| RR1U233 | PTI | 8173 | 01/08/00 | 19:00:48 |
| RR1U233 | RST | 112188 | 01/08/00 | 19:01:46 |
| RR1U233 | VEC | 38112 | 01/08/00 | 19:00:48 |
| RR1U234 | FLG | 712 | 01/08/00 | 19:10:48 |
| RR1U234 | INP | 15447 | 01/08/00 | 19:10:58 |
| RR1U234 | OUT | 832 | 01/08/00 | 19:11:14 |
| RR1U234 | PTI | 8173 | 01/08/00 | 19:11:14 |
| RR1U234 | RST | 112188 | 01/08/00 | 19:12:30 |
| RR1U234 | VEC | 38112 | 01/08/00 | 19:11:14 |
| RR1U236 | FLG | 712 | 01/08/00 | 19:20:28 |
| RR1U236 | INP | 15447 | 01/08/00 | 19:20:42 |
| RR1U236 | OUT | 832 | 01/08/00 | 19:21:00 |
| RR1U236 | PTI | 8173 | 01/08/00 | 19:21:00 |
| RR1U236 | RST | 112188 | 01/08/00 | 19:22:08 |
| RR1U236 | VEC | 38112 | 01/08/00 | 19:21:00 |
| RR1U238 | FLG | 712 | 01/08/00 | 19:29:56 |
| RR1U238 | INP | 15447 | 01/08/00 | 19:30:08 |
| RR1U238 | OUT | 832 | 01/08/00 | 19:30:30 |
| RR1U238 | PTI | 8173 | 01/08/00 | 19:30:30 |
| RR1U238 | RST | 112188 | 01/08/00 | 19:31:32 |
| RR1U238 | VEC | 38112 | 01/08/00 | 19:30:30 |
| RR2AC227 | FLG | 712 | 01/09/00 | 12:56:40 |
| RR2AC227 | INP | 15447 | 01/09/00 | 12:56:50 |
| RR2AC227 | OUT | 832 | 01/09/00 | 12:57:12 |
| RR2AC227 | PTI | 8173 | 01/09/00 | 12:57:12 |
| RR2AC227 | RST | 112189 | 01/09/00 | 12:57:42 |
| RR2AC227 | VEC | 38112 | 01/09/00 | 12:57:12 |
| RR2AM241 | FLG | 712 | 01/08/00 | 16:13:08 |
| RR2AM241 | INP | 15449 | 01/08/00 | 16:13:20 |
| RR2AM241 | OUT | 888 | 01/08/00 | 16:13:52 |
| RR2AM241 | PTI | 8173 | 01/08/00 | 16:13:52 |
| RR2AM241 | RST | 112189 | 01/08/00 | 16:14:44 |
| RR2AM241 | VEC | 38112 | 01/08/00 | 16:13:52 |
| RR2AM243 | FLG | 712 | 01/08/00 | 16:29:24 |
| RR2AM243 | INP | 15449 | 01/08/00 | 16:29:46 |
| RR2AM243 | OUT | 832 | 01/08/00 | 16:30:34 |
| RR2AM243 | PTI | 8173 | 01/08/00 | 16:30:34 |
| RR2AM243 | RST | 112189 | 01/08/00 | 16:31:18 |
| RR2AM243 | VEC | 38112 | 01/08/00 | 16:30:34 |
| RR2C14 | FLG | 710 | 01/08/00 | 16:52:10 |

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| RR2C14 | INP | 15449 | 01/08/00 | 16:52:22 |
| RR2C14 | OUT | 832 | 01/08/00 | 16:52:44 |
| RR2C14 | PTI | 8173 | 01/08/00 | 16:52:44 |
| RR2C14 | RST | 112187 | 01/08/00 | 16:53:36 |
| RR2C14 | VEC | 38112 | 01/08/00 | 16:52:44 |
| RR2I129 | FLG | 712 | 01/08/00 | 17:03:22 |
| RR2I129 | INP | 15447 | 01/08/00 | 17:03:34 |
| RR2I129 | OUT | 832 | 01/08/00 | 17:03:52 |
| RR2I129 | PTI | 8173 | 01/08/00 | 17:03:52 |
| RR2I129 | RST | 112188 | 01/08/00 | 17:04:44 |
| RR2I129 | VEC | 38112 | 01/08/00 | 17:03:52 |
| RR2NP237 | FLG | 712 | 01/08/00 | 17:13:24 |
| RR2NP237 | INP | 15447 | 01/08/00 | 17:13:32 |
| RR2NP237 | OUT | 832 | 01/08/00 | 17:13:50 |
| RR2NP237 | PTI | 8173 | 01/08/00 | 17:13:50 |
| RR2NP237 | RST | 112189 | 01/08/00 | 17:14:28 |
| RR2NP237 | VEC | 38112 | 01/08/00 | 17:13:50 |
| RR2PU238 | FLG | 712 | 01/08/00 | 19:47:24 |
| RR2PU238 | INP | 15448 | 01/08/00 | 19:47:36 |
| RR2PU238 | OUT | 832 | 01/08/00 | 19:47:56 |
| RR2PU238 | PTI | 8173 | 01/08/00 | 19:47:56 |
| RR2PU238 | RST | 112189 | 01/08/00 | 19:48:32 |
| RR2PU238 | VEC | 38112 | 01/08/00 | 19:47:56 |
| RR2PU239 | FLG | 712 | 01/08/00 | 17:54:12 |
| RR2PU239 | INP | 15449 | 01/08/00 | 17:54:24 |
| RR2PU239 | OUT | 832 | 01/08/00 | 17:54:42 |
| RR2PU239 | PTI | 8173 | 01/08/00 | 17:54:42 |
| RR2PU239 | RST | 112189 | 01/08/00 | 17:55:26 |
| RR2PU239 | VEC | 38112 | 01/08/00 | 17:54:42 |
| RR2PU240 | FLG | 712 | 01/08/00 | 19:57:38 |
| RR2PU240 | INP | 15449 | 01/08/00 | 19:57:50 |
| RR2PU240 | OUT | 832 | 01/08/00 | 19:58:12 |
| RR2PU240 | PTI | 8173 | 01/08/00 | 19:58:12 |
| RR2PU240 | RST | 112189 | 01/08/00 | 20:00:30 |
| RR2PU240 | VEC | 38112 | 01/08/00 | 19:58:12 |
| RR2TC99 | FLG | 711 | 01/08/00 | 18:14:50 |
| RR2TC99 | INP | 15447 | 01/08/00 | 18:15:00 |
| RR2TC99 | OUT | 832 | 01/08/00 | 18:15:18 |
| RR2TC99 | PTI | 8173 | 01/08/00 | 18:15:18 |
| RR2TC99 | RST | 112188 | 01/08/00 | 18:16:00 |
| RR2TC99 | VEC | 38112 | 01/08/00 | 18:15:18 |
| RR2TH229 | FLG | 712 | 01/08/00 | 18:24:02 |
| RR2TH229 | INP | 15449 | 01/08/00 | 18:24:14 |
| RR2TH229 | OUT | 832 | 01/08/00 | 18:25:14 |
| RR2TH229 | PTI | 8173 | 01/08/00 | 18:25:14 |
| RR2TH229 | RST | 112189 | 01/08/00 | 18:26:18 |
| RR2TH229 | VEC | 38112 | 01/08/00 | 18:25:14 |
| RR2U232 | FLG | 712 | 01/08/00 | 18:50:56 |
| RR2U232 | INP | 15447 | 01/08/00 | 18:51:04 |
| RR2U232 | OUT | 1000 | 01/08/00 | 18:51:36 |
| RR2U232 | PTI | 8173 | 01/08/00 | 18:51:36 |
| RR2U232 | RST | 112188 | 01/08/00 | 18:52:28 |
| RR2U232 | VEC | 38112 | 01/08/00 | 18:51:36 |
| RR2U233 | FLG | 712 | 01/08/00 | 19:02:04 |
| RR2U233 | INP | 15447 | 01/08/00 | 19:02:12 |
| RR2U233 | OUT | 832 | 01/08/00 | 19:02:40 |
| RR2U233 | PTI | 8173 | 01/08/00 | 19:02:40 |
| RR2U233 | RST | 112188 | 01/08/00 | 19:03:22 |
| RR2U233 | VEC | 38112 | 01/08/00 | 19:02:40 |
| RR2U234 | FLG | 712 | 01/08/00 | 19:12:46 |
| RR2U234 | INP | 15447 | 01/08/00 | 19:12:54 |
| RR2U234 | OUT | 832 | 01/08/00 | 19:13:12 |

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| RR2U234 | PTI | 8173 | 01/08/00 | 19:13:12 |
| RR2U234 | RST | 112188 | 01/08/00 | 19:13:52 |
| RR2U234 | VEC | 38112 | 01/08/00 | 19:13:12 |
| RR2U236 | FLG | 712 | 01/08/00 | 19:22:24 |
| RR2U236 | INP | 15447 | 01/08/00 | 19:22:34 |
| RR2U236 | OUT | 832 | 01/08/00 | 19:22:50 |
| RR2U236 | PTI | 8173 | 01/08/00 | 19:22:50 |
| RR2U236 | RST | 112188 | 01/08/00 | 19:23:38 |
| RR2U236 | VEC | 38112 | 01/08/00 | 19:22:50 |
| RR2U238 | FLG | 712 | 01/08/00 | 19:33:44 |
| RR2U238 | INP | 15447 | 01/08/00 | 19:33:54 |
| RR2U238 | OUT | 832 | 01/08/00 | 19:34:20 |
| RR2U238 | PTI | 8173 | 01/08/00 | 19:34:20 |
| RR2U238 | RST | 112188 | 01/08/00 | 19:33:28 |
| RR2U238 | VEC | 38112 | 01/08/00 | 19:34:20 |
| RR3AC227 | FLG | 712 | 01/09/00 | 12:57:56 |
| RR3AC227 | INP | 15448 | 01/09/00 | 12:58:04 |
| RR3AC227 | OUT | 832 | 01/09/00 | 12:58:28 |
| RR3AC227 | PTI | 8173 | 01/09/00 | 12:58:28 |
| RR3AC227 | RST | 112189 | 01/09/00 | 12:59:02 |
| RR3AC227 | VEC | 38112 | 01/09/00 | 12:58:28 |
| RR3AM241 | FLG | 712 | 01/08/00 | 16:15:02 |
| RR3AM241 | INP | 15449 | 01/08/00 | 16:15:10 |
| RR3AM241 | OUT | 888 | 01/08/00 | 16:15:48 |
| RR3AM241 | PTI | 8173 | 01/08/00 | 16:15:48 |
| RR3AM241 | RST | 112189 | 01/08/00 | 16:16:32 |
| RR3AM241 | VEC | 38112 | 01/08/00 | 16:15:48 |
| RR3AM243 | FLG | 712 | 01/08/00 | 16:31:34 |
| RR3AM243 | INP | 15450 | 01/08/00 | 16:31:46 |
| RR3AM243 | OUT | 832 | 01/08/00 | 16:32:56 |
| RR3AM243 | PTI | 8173 | 01/08/00 | 16:32:56 |
| RR3AM243 | RST | 112189 | 01/08/00 | 16:33:58 |
| RR3AM243 | VEC | 38112 | 01/08/00 | 16:32:56 |
| RR3C14 | FLG | 710 | 01/08/00 | 16:53:52 |
| RR3C14 | INP | 15450 | 01/08/00 | 16:54:02 |
| RR3C14 | OUT | 832 | 01/08/00 | 16:54:28 |
| RR3C14 | PTI | 8173 | 01/08/00 | 16:54:28 |
| RR3C14 | RST | 112187 | 01/08/00 | 16:55:36 |
| RR3C14 | VEC | 38112 | 01/08/00 | 16:54:28 |
| RR3I129 | FLG | 712 | 01/08/00 | 17:05:04 |
| RR3I129 | INP | 15447 | 01/08/00 | 17:05:14 |
| RR3I129 | OUT | 832 | 01/08/00 | 17:05:30 |
| RR3I129 | PTI | 8173 | 01/08/00 | 17:05:30 |
| RR3I129 | RST | 112188 | 01/08/00 | 17:06:16 |
| RR3I129 | VEC | 38112 | 01/08/00 | 17:05:30 |
| RR3NP237 | FLG | 712 | 01/08/00 | 17:14:46 |
| RR3NP237 | INP | 15447 | 01/08/00 | 17:14:56 |
| RR3NP237 | OUT | 832 | 01/08/00 | 17:15:16 |
| RR3NP237 | PTI | 8173 | 01/08/00 | 17:15:16 |
| RR3NP237 | RST | 112189 | 01/08/00 | 17:16:14 |
| RR3NP237 | VEC | 38112 | 01/08/00 | 17:15:16 |
| RR3PU238 | FLG | 712 | 01/08/00 | 19:49:00 |
| RR3PU238 | INP | 15448 | 01/08/00 | 19:49:14 |
| RR3PU238 | OUT | 832 | 01/08/00 | 19:49:36 |
| RR3PU238 | PTI | 8173 | 01/08/00 | 19:49:36 |
| RR3PU238 | RST | 112189 | 01/08/00 | 19:50:30 |
| RR3PU238 | VEC | 38112 | 01/08/00 | 19:49:36 |
| RR3PU239 | FLG | 712 | 01/08/00 | 17:55:42 |
| RR3PU239 | INP | 15449 | 01/08/00 | 17:55:52 |
| RR3PU239 | OUT | 832 | 01/08/00 | 17:56:14 |
| RR3PU239 | PTI | 8173 | 01/08/00 | 17:56:14 |
| RR3PU239 | RST | 112189 | 01/08/00 | 17:57:00 |

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| RR3PU239 | VEC | 38112 | 01/08/00 | 17:56:14 |
| RR3PU240 | FLG | 712 | 01/08/00 | 20:01:36 |
| RR3PU240 | INP | 15449 | 01/08/00 | 20:01:46 |
| RR3PU240 | OUT | 832 | 01/08/00 | 20:02:14 |
| RR3PU240 | PTI | 8173 | 01/08/00 | 20:02:14 |
| RR3PU240 | RST | 112189 | 01/08/00 | 20:02:48 |
| RR3PU240 | VEC | 38112 | 01/08/00 | 20:02:14 |
| RR3TC99 | FLG | 711 | 01/08/00 | 18:16:14 |
| RR3TC99 | INP | 15447 | 01/08/00 | 18:16:24 |
| RR3TC99 | OUT | 832 | 01/08/00 | 18:16:40 |
| RR3TC99 | PTI | 8173 | 01/08/00 | 18:16:40 |
| RR3TC99 | RST | 112188 | 01/08/00 | 18:17:28 |
| RR3TC99 | VEC | 38112 | 01/08/00 | 18:16:40 |
| RR3TH229 | FLG | 712 | 01/08/00 | 18:26:34 |
| RR3TH229 | INP | 15450 | 01/08/00 | 18:26:44 |
| RR3TH229 | OUT | 832 | 01/08/00 | 18:28:30 |
| RR3TH229 | PTI | 8173 | 01/08/00 | 18:28:30 |
| RR3TH229 | RST | 112189 | 01/08/00 | 18:29:58 |
| RR3TH229 | VEC | 38112 | 01/08/00 | 18:28:30 |
| RR3U232 | FLG | 712 | 01/08/00 | 18:52:42 |
| RR3U232 | INP | 15448 | 01/08/00 | 18:52:52 |
| RR3U232 | OUT | 1000 | 01/08/00 | 18:53:30 |
| RR3U232 | PTI | 8173 | 01/08/00 | 18:53:30 |
| RR3U232 | RST | 112188 | 01/08/00 | 18:54:20 |
| RR3U232 | VEC | 38112 | 01/08/00 | 18:53:30 |
| RR3U233 | FLG | 712 | 01/08/00 | 19:03:40 |
| RR3U233 | INP | 15448 | 01/08/00 | 19:03:50 |
| RR3U233 | OUT | 832 | 01/08/00 | 19:04:18 |
| RR3U233 | PTI | 8173 | 01/08/00 | 19:04:18 |
| RR3U233 | RST | 112188 | 01/08/00 | 19:05:06 |
| RR3U233 | VEC | 38112 | 01/08/00 | 19:04:18 |
| RR3U234 | FLG | 712 | 01/08/00 | 19:14:08 |
| RR3U234 | INP | 15448 | 01/08/00 | 19:14:20 |
| RR3U234 | OUT | 832 | 01/08/00 | 19:14:38 |
| RR3U234 | PTI | 8173 | 01/08/00 | 19:14:38 |
| RR3U234 | RST | 112188 | 01/08/00 | 19:15:32 |
| RR3U234 | VEC | 38112 | 01/08/00 | 19:14:38 |
| RR3U236 | FLG | 712 | 01/08/00 | 19:23:52 |
| RR3U236 | INP | 15448 | 01/08/00 | 19:24:02 |
| RR3U236 | OUT | 832 | 01/08/00 | 19:24:20 |
| RR3U236 | PTI | 8173 | 01/08/00 | 19:24:20 |
| RR3U236 | RST | 112188 | 01/08/00 | 19:25:10 |
| RR3U236 | VEC | 38112 | 01/08/00 | 19:24:20 |
| RR3U238 | FLG | 712 | 01/08/00 | 19:35:26 |
| RR3U238 | INP | 15448 | 01/08/00 | 19:35:40 |
| RR3U238 | OUT | 832 | 01/08/00 | 19:36:04 |
| RR3U238 | PTI | 8173 | 01/08/00 | 19:36:04 |
| RR3U238 | RST | 112188 | 01/08/00 | 19:36:50 |
| RR3U238 | VEC | 38112 | 01/08/00 | 19:36:04 |
| RR4AC227 | FLG | 712 | 01/09/00 | 12:59:16 |
| RR4AC227 | INP | 15448 | 01/09/00 | 12:59:24 |
| RR4AC227 | OUT | 832 | 01/09/00 | 12:59:46 |
| RR4AC227 | PTI | 8173 | 01/09/00 | 12:59:46 |
| RR4AC227 | RST | 112189 | 01/09/00 | 13:00:20 |
| RR4AC227 | VEC | 38112 | 01/09/00 | 12:59:46 |
| RR4AM241 | FLG | 712 | 01/08/00 | 16:16:50 |
| RR4AM241 | INP | 15449 | 01/08/00 | 16:17:04 |
| RR4AM241 | OUT | 888 | 01/08/00 | 16:17:52 |
| RR4AM241 | PTI | 8173 | 01/08/00 | 16:17:52 |
| RR4AM241 | RST | 112189 | 01/08/00 | 16:18:32 |
| RR4AM241 | VEC | 38112 | 01/08/00 | 16:17:52 |
| RR4AM243 | FLG | 712 | 01/08/00 | 16:34:12 |

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|----------|-----|--------|----------|----------|
| RR4AM243 | INP | 15450 | 01/08/00 | 16:34:22 |
| RR4AM243 | OUT | 832 | 01/08/00 | 16:36:04 |
| RR4AM243 | PTI | 8173 | 01/08/00 | 16:36:04 |
| RR4AM243 | RST | 112189 | 01/08/00 | 16:38:16 |
| RR4AM243 | VEC | 38112 | 01/08/00 | 16:36:04 |
| RR4C14 | FLG | 710 | 01/08/00 | 16:55:52 |
| RR4C14 | INP | 15450 | 01/08/00 | 16:56:04 |
| RR4C14 | OUT | 832 | 01/08/00 | 16:56:36 |
| RR4C14 | PTI | 8173 | 01/08/00 | 16:56:36 |
| RR4C14 | RST | 112187 | 01/08/00 | 16:57:16 |
| RR4C14 | VEC | 38112 | 01/08/00 | 16:56:36 |
| RR4I129 | FLG | 712 | 01/08/00 | 17:06:34 |
| RR4I129 | INP | 15447 | 01/08/00 | 17:06:58 |
| RR4I129 | OUT | 832 | 01/08/00 | 17:07:16 |
| RR4I129 | PTI | 8173 | 01/08/00 | 17:07:16 |
| RR4I129 | RST | 112188 | 01/08/00 | 17:08:10 |
| RR4I129 | VEC | 38112 | 01/08/00 | 17:07:16 |
| RR4NP237 | FLG | 712 | 01/08/00 | 17:16:28 |
| RR4NP237 | INP | 15447 | 01/08/00 | 17:16:38 |
| RR4NP237 | OUT | 832 | 01/08/00 | 17:16:58 |
| RR4NP237 | PTI | 8173 | 01/08/00 | 17:16:58 |
| RR4NP237 | RST | 112189 | 01/08/00 | 17:17:52 |
| RR4NP237 | VEC | 38112 | 01/08/00 | 17:16:58 |
| RR4PU238 | FLG | 712 | 01/08/00 | 19:50:50 |
| RR4PU238 | INP | 15448 | 01/08/00 | 19:51:00 |
| RR4PU238 | OUT | 832 | 01/08/00 | 19:51:22 |
| RR4PU238 | PTI | 8173 | 01/08/00 | 19:51:22 |
| RR4PU238 | RST | 112189 | 01/08/00 | 19:51:56 |
| RR4PU238 | VEC | 38112 | 01/08/00 | 19:51:22 |
| RR4PU239 | FLG | 712 | 01/08/00 | 17:57:14 |
| RR4PU239 | INP | 15449 | 01/08/00 | 17:57:22 |
| RR4PU239 | OUT | 832 | 01/08/00 | 17:57:48 |
| RR4PU239 | PTI | 8173 | 01/08/00 | 17:57:48 |
| RR4PU239 | RST | 112189 | 01/08/00 | 17:58:50 |
| RR4PU239 | VEC | 38112 | 01/08/00 | 17:57:48 |
| RR4PU240 | FLG | 712 | 01/08/00 | 20:03:10 |
| RR4PU240 | INP | 15449 | 01/08/00 | 20:03:20 |
| RR4PU240 | OUT | 832 | 01/08/00 | 20:03:52 |
| RR4PU240 | PTI | 8173 | 01/08/00 | 20:03:52 |
| RR4PU240 | RST | 112189 | 01/08/00 | 20:04:30 |
| RR4PU240 | VEC | 38112 | 01/08/00 | 20:03:52 |
| RR4TC99 | FLG | 711 | 01/08/00 | 18:17:46 |
| RR4TC99 | INP | 15447 | 01/08/00 | 18:17:54 |
| RR4TC99 | OUT | 832 | 01/08/00 | 18:18:12 |
| RR4TC99 | PTI | 8173 | 01/08/00 | 18:18:12 |
| RR4TC99 | RST | 112188 | 01/08/00 | 18:19:10 |
| RR4TC99 | VEC | 38112 | 01/08/00 | 18:18:12 |
| RR4TH229 | FLG | 712 | 01/08/00 | 18:30:12 |
| RR4TH229 | INP | 15450 | 01/08/00 | 18:30:22 |
| RR4TH229 | OUT | 832 | 01/08/00 | 18:33:08 |
| RR4TH229 | PTI | 8173 | 01/08/00 | 18:33:08 |
| RR4TH229 | RST | 112189 | 01/08/00 | 18:34:24 |
| RR4TH229 | VEC | 38112 | 01/08/00 | 18:33:08 |
| RR4U232 | FLG | 712 | 01/08/00 | 18:54:36 |
| RR4U232 | INP | 15448 | 01/08/00 | 18:54:46 |
| RR4U232 | OUT | 1000 | 01/08/00 | 18:55:24 |
| RR4U232 | PTI | 8173 | 01/08/00 | 18:55:24 |
| RR4U232 | RST | 112188 | 01/08/00 | 18:56:10 |
| RR4U232 | VEC | 38112 | 01/08/00 | 18:55:24 |
| RR4U233 | FLG | 712 | 01/08/00 | 19:05:22 |
| RR4U233 | INP | 15448 | 01/08/00 | 19:05:30 |
| RR4U233 | OUT | 832 | 01/08/00 | 19:05:58 |

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|----------|-----|--------|----------|----------|
| RR4U233 | PTI | 8173 | 01/08/00 | 19:05:58 |
| RR4U233 | RST | 112188 | 01/08/00 | 19:06:44 |
| RR4U233 | VEC | 38112 | 01/08/00 | 19:05:58 |
| RR4U234 | FLG | 712 | 01/08/00 | 19:15:46 |
| RR4U234 | INP | 15448 | 01/08/00 | 19:16:00 |
| RR4U234 | OUT | 832 | 01/08/00 | 19:16:18 |
| RR4U234 | PTI | 8173 | 01/08/00 | 19:16:18 |
| RR4U234 | RST | 112188 | 01/08/00 | 19:17:02 |
| RR4U234 | VEC | 38112 | 01/08/00 | 19:16:18 |
| RR4U236 | FLG | 712 | 01/08/00 | 19:25:28 |
| RR4U236 | INP | 15448 | 01/08/00 | 19:25:38 |
| RR4U236 | OUT | 832 | 01/08/00 | 19:25:56 |
| RR4U236 | PTI | 8173 | 01/08/00 | 19:25:56 |
| RR4U236 | RST | 112188 | 01/08/00 | 19:26:40 |
| RR4U236 | VEC | 38112 | 01/08/00 | 19:25:56 |
| RR4U238 | FLG | 712 | 01/08/00 | 19:37:06 |
| RR4U238 | INP | 15448 | 01/08/00 | 19:37:16 |
| RR4U238 | OUT | 832 | 01/08/00 | 19:37:40 |
| RR4U238 | PTI | 8173 | 01/08/00 | 19:37:40 |
| RR4U238 | RST | 112188 | 01/08/00 | 19:38:24 |
| RR4U238 | VEC | 38112 | 01/08/00 | 19:37:40 |
| RR5AC227 | FLG | 712 | 01/09/00 | 13:00:38 |
| RR5AC227 | INP | 15448 | 01/09/00 | 13:00:46 |
| RR5AC227 | OUT | 832 | 01/09/00 | 13:01:12 |
| RR5AC227 | PTI | 8173 | 01/09/00 | 13:01:12 |
| RR5AC227 | RST | 112189 | 01/09/00 | 13:01:48 |
| RR5AC227 | VEC | 38112 | 01/09/00 | 13:01:12 |
| RR5AM241 | FLG | 712 | 01/08/00 | 16:18:48 |
| RR5AM241 | INP | 15449 | 01/08/00 | 16:18:56 |
| RR5AM241 | OUT | 888 | 01/08/00 | 16:19:58 |
| RR5AM241 | PTI | 8173 | 01/08/00 | 16:19:58 |
| RR5AM241 | RST | 112189 | 01/08/00 | 16:20:44 |
| RR5AM241 | VEC | 38112 | 01/08/00 | 16:19:58 |
| RR5AM243 | FLG | 712 | 01/08/00 | 16:38:34 |
| RR5AM243 | INP | 15450 | 01/08/00 | 16:38:46 |
| RR5AM243 | OUT | 832 | 01/08/00 | 16:41:16 |
| RR5AM243 | PTI | 8173 | 01/08/00 | 16:41:16 |
| RR5AM243 | RST | 112189 | 01/08/00 | 16:42:02 |
| RR5AM243 | VEC | 38112 | 01/08/00 | 16:41:16 |
| RR5C14 | FLG | 710 | 01/08/00 | 16:57:34 |
| RR5C14 | INP | 15450 | 01/08/00 | 16:57:56 |
| RR5C14 | OUT | 832 | 01/08/00 | 16:58:36 |
| RR5C14 | PTI | 8173 | 01/08/00 | 16:58:36 |
| RR5C14 | RST | 112187 | 01/08/00 | 16:59:22 |
| RR5C14 | VEC | 38112 | 01/08/00 | 16:58:36 |
| RR5I129 | FLG | 712 | 01/08/00 | 17:08:24 |
| RR5I129 | INP | 15447 | 01/08/00 | 17:08:34 |
| RR5I129 | OUT | 832 | 01/08/00 | 17:08:52 |
| RR5I129 | PTI | 8173 | 01/08/00 | 17:08:52 |
| RR5I129 | RST | 112188 | 01/08/00 | 17:09:34 |
| RR5I129 | VEC | 38112 | 01/08/00 | 17:08:52 |
| RR5NP237 | FLG | 712 | 01/08/00 | 17:18:10 |
| RR5NP237 | INP | 15447 | 01/08/00 | 17:18:20 |
| RR5NP237 | OUT | 832 | 01/08/00 | 17:18:40 |
| RR5NP237 | PTI | 8173 | 01/08/00 | 17:18:40 |
| RR5NP237 | RST | 112189 | 01/08/00 | 17:20:14 |
| RR5NP237 | VEC | 38112 | 01/08/00 | 17:18:40 |
| RR5PU238 | FLG | 712 | 01/08/00 | 19:52:12 |
| RR5PU238 | INP | 15449 | 01/08/00 | 19:52:22 |
| RR5PU238 | OUT | 832 | 01/08/00 | 19:52:44 |
| RR5PU238 | PTI | 8173 | 01/08/00 | 19:52:44 |
| RR5PU238 | RST | 112189 | 01/08/00 | 19:53:16 |

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|----------|-----|--------|----------|----------|
| RR5PU238 | VEC | 38112 | 01/08/00 | 19:52:44 |
| RR5PU239 | FLG | 712 | 01/08/00 | 17:59:06 |
| RR5PU239 | INP | 15449 | 01/08/00 | 17:59:14 |
| RR5PU239 | OUT | 832 | 01/08/00 | 17:59:42 |
| RR5PU239 | PTI | 8173 | 01/08/00 | 17:59:42 |
| RR5PU239 | RST | 112189 | 01/08/00 | 18:00:32 |
| RR5PU239 | VEC | 38112 | 01/08/00 | 17:59:42 |
| RR5PU240 | FLG | 712 | 01/08/00 | 20:04:50 |
| RR5PU240 | INP | 15449 | 01/08/00 | 20:05:02 |
| RR5PU240 | OUT | 832 | 01/08/00 | 20:05:42 |
| RR5PU240 | PTI | 8173 | 01/08/00 | 20:05:42 |
| RR5PU240 | RST | 112189 | 01/08/00 | 20:06:18 |
| RR5PU240 | VEC | 38112 | 01/08/00 | 20:05:42 |
| RR5TC99 | FLG | 711 | 01/08/00 | 18:19:26 |
| RR5TC99 | INP | 15447 | 01/08/00 | 18:19:38 |
| RR5TC99 | OUT | 832 | 01/08/00 | 18:19:54 |
| RR5TC99 | PTI | 8173 | 01/08/00 | 18:19:54 |
| RR5TC99 | RST | 112188 | 01/08/00 | 18:20:32 |
| RR5TC99 | VEC | 38112 | 01/08/00 | 18:19:54 |
| RR5TH229 | FLG | 712 | 01/08/00 | 18:34:44 |
| RR5TH229 | INP | 15450 | 01/08/00 | 18:34:54 |
| RR5TH229 | OUT | 832 | 01/08/00 | 18:39:04 |
| RR5TH229 | PTI | 8173 | 01/08/00 | 18:39:04 |
| RR5TH229 | RST | 112189 | 01/08/00 | 18:40:22 |
| RR5TH229 | VEC | 38112 | 01/08/00 | 18:39:04 |
| RR5U232 | FLG | 712 | 01/08/00 | 18:56:24 |
| RR5U232 | INP | 15448 | 01/08/00 | 18:56:32 |
| RR5U232 | OUT | 1000 | 01/08/00 | 18:57:16 |
| RR5U232 | PTI | 8173 | 01/08/00 | 18:57:16 |
| RR5U232 | RST | 112188 | 01/08/00 | 18:57:58 |
| RR5U232 | VEC | 38112 | 01/08/00 | 18:57:16 |
| RR5U233 | FLG | 712 | 01/08/00 | 19:07:00 |
| RR5U233 | INP | 15448 | 01/08/00 | 19:07:10 |
| RR5U233 | OUT | 832 | 01/08/00 | 19:07:38 |
| RR5U233 | PTI | 8173 | 01/08/00 | 19:07:38 |
| RR5U233 | RST | 112188 | 01/08/00 | 19:08:36 |
| RR5U233 | VEC | 38112 | 01/08/00 | 19:07:38 |
| RR5U234 | FLG | 712 | 01/08/00 | 19:17:16 |
| RR5U234 | INP | 15448 | 01/08/00 | 19:17:26 |
| RR5U234 | OUT | 832 | 01/08/00 | 19:17:44 |
| RR5U234 | PTI | 8173 | 01/08/00 | 19:17:44 |
| RR5U234 | RST | 112188 | 01/08/00 | 19:18:30 |
| RR5U234 | VEC | 38112 | 01/08/00 | 19:17:44 |
| RR5U236 | FLG | 712 | 01/08/00 | 19:26:54 |
| RR5U236 | INP | 15448 | 01/08/00 | 19:27:04 |
| RR5U236 | OUT | 832 | 01/08/00 | 19:27:22 |
| RR5U236 | PTI | 8173 | 01/08/00 | 19:27:22 |
| RR5U236 | RST | 112188 | 01/08/00 | 19:28:10 |
| RR5U236 | VEC | 38112 | 01/08/00 | 19:27:22 |
| RR5U238 | FLG | 712 | 01/08/00 | 19:38:40 |
| RR5U238 | INP | 15448 | 01/08/00 | 19:38:50 |
| RR5U238 | OUT | 832 | 01/08/00 | 19:39:18 |
| RR5U238 | PTI | 8173 | 01/08/00 | 19:39:18 |
| RR5U238 | RST | 112188 | 01/08/00 | 19:40:00 |
| RR5U238 | VEC | 38112 | 01/08/00 | 19:39:18 |
| RR6AC227 | FLG | 712 | 01/09/00 | 13:02:12 |
| RR6AC227 | INP | 15448 | 01/09/00 | 13:02:20 |
| RR6AC227 | OUT | 832 | 01/09/00 | 13:02:48 |
| RR6AC227 | PTI | 8173 | 01/09/00 | 13:02:48 |
| RR6AC227 | RST | 112189 | 01/09/00 | 13:03:22 |
| RR6AC227 | VEC | 38112 | 01/09/00 | 13:02:48 |
| RR6AM241 | FLG | 712 | 01/08/00 | 16:21:00 |

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|----------|-----|--------|----------|----------|
| RR6AM241 | INP | 15450 | 01/08/00 | 16:23:04 |
| RR6AM241 | OUT | 888 | 01/08/00 | 16:24:32 |
| RR6AM241 | PTI | 8173 | 01/08/00 | 16:24:32 |
| RR6AM241 | RST | 112189 | 01/08/00 | 16:27:20 |
| RR6AM241 | VEC | 38112 | 01/08/00 | 16:24:32 |
| RR6AM243 | FLG | 712 | 01/08/00 | 16:42:18 |
| RR6AM243 | INP | 15450 | 01/08/00 | 16:42:30 |
| RR6AM243 | OUT | 832 | 01/08/00 | 16:46:18 |
| RR6AM243 | PTI | 8173 | 01/08/00 | 16:46:18 |
| RR6AM243 | RST | 112189 | 01/08/00 | 16:47:08 |
| RR6AM243 | VEC | 38112 | 01/08/00 | 16:46:18 |
| RR6C14 | FLG | 710 | 01/08/00 | 16:59:38 |
| RR6C14 | INP | 15450 | 01/08/00 | 16:59:48 |
| RR6C14 | OUT | 832 | 01/08/00 | 17:00:46 |
| RR6C14 | PTI | 8173 | 01/08/00 | 17:00:46 |
| RR6C14 | RST | 112187 | 01/08/00 | 17:01:32 |
| RR6C14 | VEC | 38112 | 01/08/00 | 17:00:46 |
| RR6I129 | FLG | 712 | 01/08/00 | 17:09:50 |
| RR6I129 | INP | 15447 | 01/08/00 | 17:09:58 |
| RR6I129 | OUT | 832 | 01/08/00 | 17:10:16 |
| RR6I129 | PTI | 8173 | 01/08/00 | 17:10:16 |
| RR6I129 | RST | 112188 | 01/08/00 | 17:11:08 |
| RR6I129 | VEC | 38112 | 01/08/00 | 17:10:16 |
| RR6NP237 | FLG | 712 | 01/08/00 | 17:20:30 |
| RR6NP237 | INP | 15448 | 01/08/00 | 17:20:44 |
| RR6NP237 | OUT | 832 | 01/08/00 | 17:21:06 |
| RR6NP237 | PTI | 8173 | 01/08/00 | 17:21:06 |
| RR6NP237 | RST | 112189 | 01/08/00 | 17:21:48 |
| RR6NP237 | VEC | 38112 | 01/08/00 | 17:21:06 |
| RR6PU238 | FLG | 712 | 01/08/00 | 19:53:34 |
| RR6PU238 | INP | 15449 | 01/08/00 | 19:53:44 |
| RR6PU238 | OUT | 832 | 01/08/00 | 19:54:08 |
| RR6PU238 | PTI | 8173 | 01/08/00 | 19:54:08 |
| RR6PU238 | RST | 112189 | 01/08/00 | 19:54:42 |
| RR6PU238 | VEC | 38112 | 01/08/00 | 19:54:08 |
| RR6PU239 | FLG | 712 | 01/08/00 | 18:00:48 |
| RR6PU239 | INP | 15450 | 01/08/00 | 18:01:00 |
| RR6PU239 | OUT | 832 | 01/08/00 | 18:01:34 |
| RR6PU239 | PTI | 8173 | 01/08/00 | 18:01:34 |
| RR6PU239 | RST | 112189 | 01/08/00 | 18:02:16 |
| RR6PU239 | VEC | 38112 | 01/08/00 | 18:01:34 |
| RR6PU240 | FLG | 712 | 01/08/00 | 20:06:32 |
| RR6PU240 | INP | 15450 | 01/08/00 | 20:06:40 |
| RR6PU240 | OUT | 832 | 01/08/00 | 20:07:32 |
| RR6PU240 | PTI | 8173 | 01/08/00 | 20:07:32 |
| RR6PU240 | RST | 112189 | 01/08/00 | 20:08:02 |
| RR6PU240 | VEC | 38112 | 01/08/00 | 20:07:32 |
| RR6TC99 | FLG | 711 | 01/08/00 | 18:20:46 |
| RR6TC99 | INP | 15447 | 01/08/00 | 18:20:56 |
| RR6TC99 | OUT | 832 | 01/08/00 | 18:21:14 |
| RR6TC99 | PTI | 8173 | 01/08/00 | 18:21:14 |
| RR6TC99 | RST | 112188 | 01/08/00 | 18:21:50 |
| RR6TC99 | VEC | 38112 | 01/08/00 | 18:21:14 |
| RR6TH229 | FLG | 712 | 01/08/00 | 18:40:38 |
| RR6TH229 | INP | 15450 | 01/08/00 | 18:40:48 |
| RR6TH229 | OUT | 832 | 01/08/00 | 18:47:18 |
| RR6TH229 | PTI | 8173 | 01/08/00 | 18:47:18 |
| RR6TH229 | RST | 112189 | 01/08/00 | 18:48:28 |
| RR6TH229 | VEC | 38112 | 01/08/00 | 18:47:18 |
| RR6U232 | FLG | 712 | 01/08/00 | 18:58:12 |
| RR6U232 | INP | 15448 | 01/08/00 | 18:58:20 |
| RR6U232 | OUT | 1000 | 01/08/00 | 18:59:10 |

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|---------|-----|--------|----------|----------|
| RR6U232 | PTI | 8173 | 01/08/00 | 18:59:10 |
| RR6U232 | RST | 112188 | 01/08/00 | 18:59:56 |
| RR6U232 | VEC | 38112 | 01/08/00 | 18:59:10 |
| RR6U233 | FLG | 712 | 01/08/00 | 19:08:56 |
| RR6U233 | INP | 15448 | 01/08/00 | 19:09:06 |
| RR6U233 | OUT | 832 | 01/08/00 | 19:09:38 |
| RR6U233 | PTI | 8173 | 01/08/00 | 19:09:38 |
| RR6U233 | RST | 112188 | 01/08/00 | 19:10:30 |
| RR6U233 | VEC | 38112 | 01/08/00 | 19:09:38 |
| RR6U234 | FLG | 712 | 01/08/00 | 19:18:46 |
| RR6U234 | INP | 15448 | 01/08/00 | 19:18:56 |
| RR6U234 | OUT | 832 | 01/08/00 | 19:19:16 |
| RR6U234 | PTI | 8173 | 01/08/00 | 19:19:16 |
| RR6U234 | RST | 112188 | 01/08/00 | 19:20:08 |
| RR6U234 | VEC | 38112 | 01/08/00 | 19:19:16 |
| RR6U236 | FLG | 712 | 01/08/00 | 19:28:26 |
| RR6U236 | INP | 15448 | 01/08/00 | 19:28:34 |
| RR6U236 | OUT | 832 | 01/08/00 | 19:28:52 |
| RR6U236 | PTI | 8173 | 01/08/00 | 19:28:52 |
| RR6U236 | RST | 112188 | 01/08/00 | 19:29:40 |
| RR6U236 | VEC | 38112 | 01/08/00 | 19:28:52 |
| RR6U238 | FLG | 712 | 01/08/00 | 19:40:16 |
| RR6U238 | INP | 15448 | 01/08/00 | 19:40:26 |
| RR6U238 | OUT | 832 | 01/08/00 | 19:40:54 |
| RR6U238 | PTI | 8173 | 01/08/00 | 19:40:54 |
| RR6U238 | RST | 112188 | 01/08/00 | 19:41:36 |
| RR6U238 | VEC | 38112 | 01/08/00 | 19:40:54 |

..\SC_data\ (input and output files for Bounding Representation analysis)

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|----------|-----|-------|----------|----------|
| SC1AC227 | FLG | 664 | 01/09/00 | 13:35:20 |
| SC1AC227 | INP | 6687 | 01/09/00 | 13:35:28 |
| SC1AC227 | OUT | 15414 | 01/09/00 | 13:35:40 |
| SC1AC227 | PTI | 1311 | 01/09/00 | 13:35:40 |
| SC1AC227 | VEC | 3132 | 01/09/00 | 13:35:40 |
| SC1AM241 | FLG | 664 | 01/09/00 | 13:41:12 |
| SC1AM241 | INP | 6687 | 01/09/00 | 13:41:20 |
| SC1AM241 | OUT | 15470 | 01/09/00 | 13:41:32 |
| SC1AM241 | PTI | 1311 | 01/09/00 | 13:41:32 |
| SC1AM241 | VEC | 3132 | 01/09/00 | 13:41:32 |
| SC1AM243 | FLG | 664 | 01/09/00 | 13:47:34 |
| SC1AM243 | INP | 6687 | 01/09/00 | 13:47:42 |
| SC1AM243 | OUT | 15341 | 01/09/00 | 13:47:54 |
| SC1AM243 | PTI | 1311 | 01/09/00 | 13:47:54 |
| SC1AM243 | VEC | 3132 | 01/09/00 | 13:47:54 |
| SC1C14 | FLG | 662 | 01/09/00 | 13:52:42 |
| SC1C14 | INP | 6687 | 01/09/00 | 13:52:42 |
| SC1C14 | OUT | 13985 | 12/28/99 | 12:11:24 |
| SC1C14 | PTI | 1311 | 12/28/99 | 12:11:24 |
| SC1C14 | VEC | 3132 | 12/28/99 | 12:11:24 |
| SC1I129 | FLG | 664 | 01/09/00 | 13:57:12 |
| SC1I129 | INP | 6687 | 01/09/00 | 13:57:20 |
| SC1I129 | OUT | 13985 | 01/09/00 | 13:57:32 |
| SC1I129 | PTI | 1311 | 01/09/00 | 13:57:32 |
| SC1I129 | VEC | 3132 | 01/09/00 | 13:57:32 |
| SC1NP237 | FLG | 664 | 01/09/00 | 14:02:32 |
| SC1NP237 | INP | 6687 | 01/09/00 | 14:02:44 |
| SC1NP237 | OUT | 15268 | 01/09/00 | 14:02:56 |
| SC1NP237 | PTI | 1311 | 01/09/00 | 14:02:56 |
| SC1NP237 | VEC | 3132 | 01/09/00 | 14:02:56 |
| SC1PU238 | FLG | 664 | 01/09/00 | 14:08:04 |
| SC1PU238 | INP | 6687 | 01/09/00 | 14:08:12 |
| SC1PU238 | OUT | 15268 | 01/09/00 | 14:08:24 |
| SC1PU238 | PTI | 1311 | 01/09/00 | 14:08:24 |
| SC1PU238 | VEC | 3132 | 01/09/00 | 14:08:24 |
| SC1PU239 | FLG | 664 | 01/09/00 | 14:17:54 |
| SC1PU239 | INP | 6687 | 01/09/00 | 14:17:54 |
| SC1PU239 | OUT | 14043 | 01/09/00 | 14:15:56 |
| SC1PU239 | PTI | 1311 | 01/09/00 | 14:15:56 |
| SC1PU239 | VEC | 3132 | 01/09/00 | 14:15:56 |
| SC1PU240 | FLG | 664 | 01/09/00 | 14:21:58 |
| SC1PU240 | INP | 6687 | 01/09/00 | 14:21:58 |
| SC1PU240 | OUT | 15268 | 01/09/00 | 14:21:06 |
| SC1PU240 | PTI | 1311 | 01/09/00 | 14:21:06 |
| SC1PU240 | VEC | 3132 | 01/09/00 | 14:21:06 |
| SC1TC99 | FLG | 663 | 01/09/00 | 14:27:06 |
| SC1TC99 | INP | 6687 | 01/09/00 | 14:27:16 |
| SC1TC99 | OUT | 14043 | 01/09/00 | 14:27:28 |
| SC1TC99 | PTI | 1311 | 01/09/00 | 14:27:28 |
| SC1TC99 | VEC | 3132 | 01/09/00 | 14:27:28 |
| SC1TH229 | FLG | 664 | 01/09/00 | 14:32:20 |
| SC1TH229 | INP | 6687 | 01/09/00 | 14:32:28 |
| SC1TH229 | OUT | 15341 | 01/09/00 | 14:32:40 |
| SC1TH229 | PTI | 1311 | 01/09/00 | 14:32:40 |
| SC1TH229 | VEC | 3132 | 01/09/00 | 14:32:40 |
| SC1U232 | FLG | 664 | 01/09/00 | 14:37:40 |
| SC1U232 | INP | 6687 | 01/09/00 | 14:37:54 |
| SC1U232 | OUT | 15874 | 01/09/00 | 14:38:14 |
| SC1U232 | PTI | 1311 | 01/09/00 | 14:38:14 |

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|----------|-----|-------|----------|----------|
| SC1U232 | VEC | 3132 | 01/09/00 | 14:38:14 |
| SC1U233 | FLG | 664 | 01/09/00 | 14:44:20 |
| SC1U233 | INP | 6687 | 01/09/00 | 14:44:28 |
| SC1U233 | OUT | 15414 | 01/09/00 | 14:44:40 |
| SC1U233 | PTI | 1311 | 01/09/00 | 14:44:40 |
| SC1U233 | VEC | 3132 | 01/09/00 | 14:44:40 |
| SC1U234 | FLG | 664 | 01/09/00 | 14:50:44 |
| SC1U234 | INP | 6687 | 01/09/00 | 14:50:54 |
| SC1U234 | OUT | 14043 | 01/09/00 | 14:51:06 |
| SC1U234 | PTI | 1311 | 01/09/00 | 14:51:06 |
| SC1U234 | VEC | 3132 | 01/09/00 | 14:51:06 |
| SC1U236 | FLG | 664 | 01/09/00 | 14:56:48 |
| SC1U236 | INP | 6687 | 01/09/00 | 14:56:56 |
| SC1U236 | OUT | 14043 | 01/09/00 | 14:57:08 |
| SC1U236 | PTI | 1311 | 01/09/00 | 14:57:06 |
| SC1U236 | VEC | 3132 | 01/09/00 | 14:57:08 |
| SC1U238 | FLG | 664 | 01/09/00 | 15:02:28 |
| SC1U238 | INP | 6687 | 01/09/00 | 15:02:38 |
| SC1U238 | OUT | 15341 | 01/09/00 | 15:02:50 |
| SC1U238 | PTI | 1311 | 01/09/00 | 15:02:50 |
| SC1U238 | VEC | 3132 | 01/09/00 | 15:02:50 |
| SC2AC227 | FLG | 664 | 01/09/00 | 13:36:34 |
| SC2AC227 | INP | 6687 | 01/09/00 | 13:36:42 |
| SC2AC227 | OUT | 15498 | 01/09/00 | 13:36:52 |
| SC2AC227 | PTI | 1311 | 01/09/00 | 13:36:52 |
| SC2AC227 | VEC | 3132 | 01/09/00 | 13:36:52 |
| SC2AM241 | FLG | 664 | 01/09/00 | 13:42:08 |
| SC2AM241 | INP | 6689 | 01/09/00 | 13:42:18 |
| SC2AM241 | OUT | 15554 | 01/09/00 | 13:42:30 |
| SC2AM241 | PTI | 1311 | 01/09/00 | 13:42:30 |
| SC2AM241 | VEC | 3132 | 01/09/00 | 13:42:30 |
| SC2AM243 | FLG | 664 | 01/09/00 | 13:48:30 |
| SC2AM243 | INP | 6690 | 01/09/00 | 13:48:38 |
| SC2AM243 | OUT | 15425 | 01/09/00 | 13:48:52 |
| SC2AM243 | PTI | 1311 | 01/09/00 | 13:48:52 |
| SC2AM243 | VEC | 3132 | 01/09/00 | 13:48:52 |
| SC2C14 | FLG | 662 | 01/09/00 | 13:53:18 |
| SC2C14 | INP | 6690 | 01/09/00 | 13:53:28 |
| SC2C14 | OUT | 14069 | 01/09/00 | 13:53:38 |
| SC2C14 | PTI | 1311 | 01/09/00 | 13:53:38 |
| SC2C14 | VEC | 3132 | 01/09/00 | 13:53:38 |
| SC2I129 | FLG | 664 | 01/09/00 | 13:58:10 |
| SC2I129 | INP | 6688 | 01/09/00 | 13:58:18 |
| SC2I129 | OUT | 14069 | 01/09/00 | 13:58:30 |
| SC2I129 | PTI | 1311 | 01/09/00 | 13:58:30 |
| SC2I129 | VEC | 3132 | 01/09/00 | 13:58:30 |
| SC2NP237 | FLG | 664 | 01/09/00 | 14:03:30 |
| SC2NP237 | INP | 6689 | 01/09/00 | 14:03:40 |
| SC2NP237 | OUT | 15352 | 01/09/00 | 14:03:52 |
| SC2NP237 | PTI | 1311 | 01/09/00 | 14:03:52 |
| SC2NP237 | VEC | 3132 | 01/09/00 | 14:03:52 |
| SC2PU238 | FLG | 664 | 01/09/00 | 14:09:18 |
| SC2PU238 | INP | 6688 | 01/09/00 | 14:09:30 |
| SC2PU238 | OUT | 15352 | 01/09/00 | 14:09:42 |
| SC2PU238 | PTI | 1311 | 01/09/00 | 14:09:42 |
| SC2PU238 | VEC | 3132 | 01/09/00 | 14:09:42 |
| SC2PU239 | FLG | 664 | 01/09/00 | 14:18:24 |
| SC2PU239 | INP | 6690 | 01/09/00 | 14:18:24 |
| SC2PU239 | OUT | 14127 | 01/09/00 | 14:17:02 |
| SC2PU239 | PTI | 1311 | 01/09/00 | 14:17:02 |
| SC2PU239 | VEC | 3132 | 01/09/00 | 14:17:02 |
| SC2PU240 | FLG | 664 | 01/09/00 | 14:22:28 |

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|----------|-----|-------|----------|----------|
| SC2PU240 | INP | 6690 | 01/09/00 | 14:22:38 |
| SC2PU240 | OUT | 15352 | 01/09/00 | 14:22:50 |
| SC2PU240 | PTI | 1311 | 01/09/00 | 14:22:50 |
| SC2PU240 | VEC | 3132 | 01/09/00 | 14:22:50 |
| SC2TC99 | FLG | 663 | 01/09/00 | 14:28:04 |
| SC2TC99 | INP | 6687 | 01/09/00 | 14:28:14 |
| SC2TC99 | OUT | 14127 | 01/09/00 | 14:28:26 |
| SC2TC99 | PTI | 1311 | 01/09/00 | 14:28:26 |
| SC2TC99 | VEC | 3132 | 01/09/00 | 14:28:26 |
| SC2TH229 | FLG | 664 | 01/09/00 | 14:33:10 |
| SC2TH229 | INP | 6690 | 01/09/00 | 14:33:20 |
| SC2TH229 | OUT | 15425 | 01/09/00 | 14:33:32 |
| SC2TH229 | PTI | 1311 | 01/09/00 | 14:33:32 |
| SC2TH229 | VEC | 3132 | 01/09/00 | 14:33:32 |
| SC2U232 | FLG | 664 | 01/09/00 | 14:39:00 |
| SC2U232 | INP | 6688 | 01/09/00 | 14:39:16 |
| SC2U232 | OUT | 15958 | 01/09/00 | 14:39:28 |
| SC2U232 | PTI | 1311 | 01/09/00 | 14:39:28 |
| SC2U232 | VEC | 3132 | 01/09/00 | 14:39:28 |
| SC2U233 | FLG | 664 | 01/09/00 | 14:45:26 |
| SC2U233 | INP | 6689 | 01/09/00 | 14:45:34 |
| SC2U233 | OUT | 15498 | 01/09/00 | 14:45:50 |
| SC2U233 | PTI | 1311 | 01/09/00 | 14:45:50 |
| SC2U233 | VEC | 3132 | 01/09/00 | 14:45:50 |
| SC2U234 | FLG | 664 | 01/09/00 | 14:51:46 |
| SC2U234 | INP | 6689 | 01/09/00 | 14:51:56 |
| SC2U234 | OUT | 14127 | 01/09/00 | 14:52:06 |
| SC2U234 | PTI | 1311 | 01/09/00 | 14:52:06 |
| SC2U234 | VEC | 3132 | 01/09/00 | 14:52:06 |
| SC2U236 | FLG | 664 | 01/09/00 | 14:57:44 |
| SC2U236 | INP | 6689 | 01/09/00 | 14:57:54 |
| SC2U236 | OUT | 14127 | 01/09/00 | 14:58:06 |
| SC2U236 | PTI | 1311 | 01/09/00 | 14:58:06 |
| SC2U236 | VEC | 3132 | 01/09/00 | 14:58:06 |
| SC2U238 | FLG | 664 | 01/09/00 | 15:03:40 |
| SC2U238 | INP | 6689 | 01/09/00 | 15:03:50 |
| SC2U238 | OUT | 15425 | 01/09/00 | 15:04:02 |
| SC2U238 | PTI | 1311 | 01/09/00 | 15:04:02 |
| SC2U238 | VEC | 3132 | 01/09/00 | 15:04:02 |
| SC3AC227 | FLG | 664 | 01/09/00 | 13:37:26 |
| SC3AC227 | INP | 6688 | 01/09/00 | 13:37:34 |
| SC3AC227 | OUT | 15498 | 01/09/00 | 13:37:46 |
| SC3AC227 | PTI | 1311 | 01/09/00 | 13:37:46 |
| SC3AC227 | VEC | 3132 | 01/09/00 | 13:37:46 |
| SC3AM241 | FLG | 664 | 01/09/00 | 13:43:12 |
| SC3AM241 | INP | 6689 | 01/09/00 | 13:43:18 |
| SC3AM241 | OUT | 15554 | 01/09/00 | 13:43:30 |
| SC3AM241 | PTI | 1311 | 01/09/00 | 13:43:30 |
| SC3AM241 | VEC | 3132 | 01/09/00 | 13:43:30 |
| SC3AM243 | FLG | 664 | 01/09/00 | 13:49:22 |
| SC3AM243 | INP | 6690 | 01/09/00 | 13:49:30 |
| SC3AM243 | OUT | 15425 | 01/09/00 | 13:49:42 |
| SC3AM243 | PTI | 1311 | 01/09/00 | 13:49:42 |
| SC3AM243 | VEC | 3132 | 01/09/00 | 13:49:42 |
| SC3C14 | FLG | 662 | 01/09/00 | 13:54:24 |
| SC3C14 | INP | 6690 | 01/09/00 | 13:54:32 |
| SC3C14 | OUT | 14069 | 01/09/00 | 13:54:42 |
| SC3C14 | PTI | 1311 | 01/09/00 | 13:54:42 |
| SC3C14 | VEC | 3132 | 01/09/00 | 13:54:42 |
| SC3I129 | FLG | 664 | 01/09/00 | 13:59:04 |
| SC3I129 | INP | 6688 | 01/09/00 | 13:59:14 |
| SC3I129 | OUT | 14069 | 01/09/00 | 13:59:24 |

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|----------|-----|-------|----------|----------|
| SC3I129 | PTI | 1311 | 01/09/00 | 13:59:24 |
| SC3I129 | VEC | 3132 | 01/09/00 | 13:59:24 |
| SC3NP237 | FLG | 664 | 01/09/00 | 14:04:26 |
| SC3NP237 | INP | 6689 | 01/09/00 | 14:04:38 |
| SC3NP237 | OUT | 15352 | 01/09/00 | 14:04:50 |
| SC3NP237 | PTI | 1311 | 01/09/00 | 14:04:50 |
| SC3NP237 | VEC | 3132 | 01/09/00 | 14:04:50 |
| SC3PU238 | FLG | 664 | 01/09/00 | 14:10:24 |
| SC3PU238 | INP | 6688 | 01/09/00 | 14:10:32 |
| SC3PU238 | OUT | 15352 | 01/09/00 | 14:10:44 |
| SC3PU238 | PTI | 1311 | 01/09/00 | 14:10:44 |
| SC3PU238 | VEC | 3132 | 01/09/00 | 14:10:44 |
| SC3PU239 | FLG | 664 | 01/09/00 | 14:19:02 |
| SC3PU239 | INP | 6691 | 01/09/00 | 14:19:10 |
| SC3PU239 | OUT | 14127 | 01/09/00 | 14:19:26 |
| SC3PU239 | PTI | 1311 | 01/09/00 | 14:19:26 |
| SC3PU239 | VEC | 3132 | 01/09/00 | 14:19:26 |
| SC3PU240 | FLG | 664 | 01/09/00 | 14:23:36 |
| SC3PU240 | INP | 6690 | 01/09/00 | 14:23:46 |
| SC3PU240 | OUT | 15352 | 01/09/00 | 14:23:58 |
| SC3PU240 | PTI | 1311 | 01/09/00 | 14:23:58 |
| SC3PU240 | VEC | 3132 | 01/09/00 | 14:23:58 |
| SC3TC99 | FLG | 663 | 01/09/00 | 14:28:58 |
| SC3TC99 | INP | 6688 | 01/09/00 | 14:29:08 |
| SC3TC99 | OUT | 14127 | 01/09/00 | 14:29:18 |
| SC3TC99 | PTI | 1311 | 01/09/00 | 14:29:18 |
| SC3TC99 | VEC | 3132 | 01/09/00 | 14:29:18 |
| SC3TH229 | FLG | 664 | 01/09/00 | 14:34:18 |
| SC3TH229 | INP | 6690 | 01/09/00 | 14:34:30 |
| SC3TH229 | OUT | 15425 | 01/09/00 | 14:34:42 |
| SC3TH229 | PTI | 1311 | 01/09/00 | 14:34:42 |
| SC3TH229 | VEC | 3132 | 01/09/00 | 14:34:42 |
| SC3U232 | FLG | 664 | 01/09/00 | 14:40:08 |
| SC3U232 | INP | 6688 | 01/09/00 | 14:40:18 |
| SC3U232 | OUT | 15958 | 01/09/00 | 14:40:30 |
| SC3U232 | PTI | 1311 | 01/09/00 | 14:40:30 |
| SC3U232 | VEC | 3132 | 01/09/00 | 14:40:30 |
| SC3U233 | FLG | 664 | 01/09/00 | 14:46:34 |
| SC3U233 | INP | 6690 | 01/09/00 | 14:46:44 |
| SC3U233 | OUT | 15498 | 01/09/00 | 14:46:58 |
| SC3U233 | PTI | 1311 | 01/09/00 | 14:46:58 |
| SC3U233 | VEC | 3132 | 01/09/00 | 14:46:58 |
| SC3U234 | FLG | 664 | 01/09/00 | 14:52:56 |
| SC3U234 | INP | 6690 | 01/09/00 | 14:53:04 |
| SC3U234 | OUT | 14127 | 01/09/00 | 14:53:16 |
| SC3U234 | PTI | 1311 | 01/09/00 | 14:53:16 |
| SC3U234 | VEC | 3132 | 01/09/00 | 14:53:16 |
| SC3U236 | FLG | 664 | 01/09/00 | 14:58:46 |
| SC3U236 | INP | 6690 | 01/09/00 | 14:58:58 |
| SC3U236 | OUT | 14127 | 01/09/00 | 14:59:10 |
| SC3U236 | PTI | 1311 | 01/09/00 | 14:59:10 |
| SC3U236 | VEC | 3132 | 01/09/00 | 14:59:10 |
| SC3U238 | FLG | 664 | 01/09/00 | 15:04:38 |
| SC3U238 | INP | 6690 | 01/09/00 | 15:04:48 |
| SC3U238 | OUT | 15425 | 01/09/00 | 15:04:58 |
| SC3U238 | PTI | 1311 | 01/09/00 | 15:04:58 |
| SC3U238 | VEC | 3132 | 01/09/00 | 15:04:58 |
| SC4AC227 | FLG | 664 | 01/09/00 | 13:38:28 |
| SC4AC227 | INP | 6688 | 01/09/00 | 13:38:36 |
| SC4AC227 | OUT | 15498 | 01/09/00 | 13:38:46 |
| SC4AC227 | PTI | 1311 | 01/09/00 | 13:38:46 |
| SC4AC227 | VEC | 3132 | 01/09/00 | 13:38:46 |

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|----------|-----|-------|----------|----------|
| SC4AM241 | FLG | 664 | 01/09/00 | 13:44:24 |
| SC4AM241 | INP | 6689 | 01/09/00 | 13:44:32 |
| SC4AM241 | OUT | 15554 | 01/09/00 | 13:44:44 |
| SC4AM241 | PTI | 1311 | 01/09/00 | 13:44:44 |
| SC4AM241 | VEC | 3132 | 01/09/00 | 13:44:44 |
| SC4AM243 | FLG | 664 | 01/09/00 | 13:50:26 |
| SC4AM243 | INP | 6690 | 01/09/00 | 13:50:32 |
| SC4AM243 | OUT | 15425 | 01/09/00 | 13:50:46 |
| SC4AM243 | PTI | 1311 | 01/09/00 | 13:50:46 |
| SC4AM243 | VEC | 3132 | 01/09/00 | 13:50:46 |
| SC4C14 | FLG | 662 | 01/09/00 | 13:55:20 |
| SC4C14 | INP | 6690 | 01/09/00 | 13:55:34 |
| SC4C14 | OUT | 14069 | 01/09/00 | 13:55:50 |
| SC4C14 | PTI | 1311 | 01/09/00 | 13:55:50 |
| SC4C14 | VEC | 3132 | 01/09/00 | 13:55:50 |
| SC4I129 | FLG | 664 | 01/09/00 | 13:59:58 |
| SC4I129 | INP | 6688 | 01/09/00 | 14:00:10 |
| SC4I129 | OUT | 14069 | 01/09/00 | 14:00:20 |
| SC4I129 | PTI | 1311 | 01/09/00 | 14:00:20 |
| SC4I129 | VEC | 3132 | 01/09/00 | 14:00:20 |
| SC4NP237 | FLG | 664 | 01/09/00 | 14:05:24 |
| SC4NP237 | INP | 6689 | 01/09/00 | 14:05:34 |
| SC4NP237 | OUT | 15352 | 01/09/00 | 14:05:46 |
| SC4NP237 | PTI | 1311 | 01/09/00 | 14:05:46 |
| SC4NP237 | VEC | 3132 | 01/09/00 | 14:05:46 |
| SC4PU238 | FLG | 664 | 01/09/00 | 14:11:34 |
| SC4PU238 | INP | 6688 | 01/09/00 | 14:11:44 |
| SC4PU238 | OUT | 15352 | 01/09/00 | 14:11:54 |
| SC4PU238 | PTI | 1311 | 01/09/00 | 14:11:54 |
| SC4PU238 | VEC | 3132 | 01/09/00 | 14:11:54 |
| SC4PU240 | FLG | 664 | 01/09/00 | 14:25:12 |
| SC4PU240 | INP | 6690 | 01/09/00 | 14:25:18 |
| SC4PU240 | OUT | 15352 | 01/09/00 | 14:25:32 |
| SC4PU240 | PTI | 1311 | 01/09/00 | 14:25:32 |
| SC4PU240 | VEC | 3132 | 01/09/00 | 14:25:32 |
| SC4TC99 | FLG | 663 | 01/09/00 | 14:29:50 |
| SC4TC99 | INP | 6688 | 01/09/00 | 14:30:04 |
| SC4TC99 | OUT | 14127 | 01/09/00 | 14:30:16 |
| SC4TC99 | PTI | 1311 | 01/09/00 | 14:30:16 |
| SC4TC99 | VEC | 3132 | 01/09/00 | 14:30:16 |
| SC4TH229 | FLG | 664 | 01/09/00 | 14:35:22 |
| SC4TH229 | INP | 6690 | 01/09/00 | 14:35:40 |
| SC4TH229 | OUT | 15425 | 01/09/00 | 14:35:56 |
| SC4TH229 | PTI | 1311 | 01/09/00 | 14:35:56 |
| SC4TH229 | VEC | 3132 | 01/09/00 | 14:35:56 |
| SC4U232 | FLG | 664 | 01/09/00 | 14:41:04 |
| SC4U232 | INP | 6688 | 01/09/00 | 14:41:16 |
| SC4U232 | OUT | 15958 | 01/09/00 | 14:41:32 |
| SC4U232 | PTI | 1311 | 01/09/00 | 14:41:32 |
| SC4U232 | VEC | 3132 | 01/09/00 | 14:41:32 |
| SC4U233 | FLG | 664 | 01/09/00 | 14:47:36 |
| SC4U233 | INP | 6690 | 01/09/00 | 14:47:46 |
| SC4U233 | OUT | 15498 | 01/09/00 | 14:47:58 |
| SC4U233 | PTI | 1311 | 01/09/00 | 14:47:58 |
| SC4U233 | VEC | 3132 | 01/09/00 | 14:47:58 |
| SC4U234 | FLG | 664 | 01/09/00 | 14:53:58 |
| SC4U234 | INP | 6690 | 01/09/00 | 14:54:08 |
| SC4U234 | OUT | 14127 | 01/09/00 | 14:54:18 |
| SC4U234 | PTI | 1311 | 01/09/00 | 14:54:18 |
| SC4U234 | VEC | 3132 | 01/09/00 | 14:54:18 |
| SC4U236 | FLG | 664 | 01/09/00 | 14:59:42 |
| SC4U236 | INP | 6690 | 01/09/00 | 14:59:52 |

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|----------|-----|-------|----------|----------|
| SC4U236 | OUT | 14127 | 01/09/00 | 15:00:02 |
| SC4U236 | PTI | 1311 | 01/09/00 | 15:00:02 |
| SC4U236 | VEC | 3132 | 01/09/00 | 15:00:02 |
| SC4U238 | FLG | 664 | 01/09/00 | 15:05:34 |
| SC4U238 | INP | 6690 | 01/09/00 | 15:05:44 |
| SC4U238 | OUT | 15425 | 01/09/00 | 15:05:56 |
| SC4U238 | PTI | 1311 | 01/09/00 | 15:05:56 |
| SC4U238 | VEC | 3132 | 01/09/00 | 15:05:56 |
| SC5AC227 | FLG | 664 | 01/09/00 | 13:39:14 |
| SC5AC227 | INP | 6688 | 01/09/00 | 13:39:22 |
| SC5AC227 | OUT | 15498 | 01/09/00 | 13:39:32 |
| SC5AC227 | PTI | 1311 | 01/09/00 | 13:39:32 |
| SC5AC227 | VEC | 3132 | 01/09/00 | 13:39:32 |
| SC5AM241 | FLG | 664 | 01/09/00 | 13:45:16 |
| SC5AM241 | INP | 6689 | 01/09/00 | 13:45:26 |
| SC5AM241 | OUT | 15554 | 01/09/00 | 13:45:36 |
| SC5AM241 | PTI | 1311 | 01/09/00 | 13:45:36 |
| SC5AM241 | VEC | 3132 | 01/09/00 | 13:45:36 |
| SC5AM243 | FLG | 664 | 01/09/00 | 13:51:34 |
| SC5AM243 | INP | 6691 | 01/09/00 | 13:51:46 |
| SC5AM243 | OUT | 15425 | 01/09/00 | 13:52:02 |
| SC5AM243 | PTI | 1311 | 01/09/00 | 13:52:02 |
| SC5AM243 | VEC | 3132 | 01/09/00 | 13:52:02 |
| SC5C14 | FLG | 662 | 01/09/00 | 13:56:20 |
| SC5C14 | INP | 6690 | 01/09/00 | 13:56:30 |
| SC5C14 | OUT | 14069 | 01/09/00 | 13:56:42 |
| SC5C14 | PTI | 1311 | 01/09/00 | 13:56:42 |
| SC5C14 | VEC | 3132 | 01/09/00 | 13:56:42 |
| SC5I129 | FLG | 664 | 01/09/00 | 14:00:50 |
| SC5I129 | INP | 6689 | 01/09/00 | 14:00:56 |
| SC5I129 | OUT | 14069 | 01/09/00 | 14:01:08 |
| SC5I129 | PTI | 1311 | 01/09/00 | 14:01:08 |
| SC5I129 | VEC | 3132 | 01/09/00 | 14:01:08 |
| SC5NP237 | FLG | 664 | 01/09/00 | 14:06:26 |
| SC5NP237 | INP | 6689 | 01/09/00 | 14:06:32 |
| SC5NP237 | OUT | 15352 | 01/09/00 | 14:06:44 |
| SC5NP237 | PTI | 1311 | 01/09/00 | 14:06:44 |
| SC5NP237 | VEC | 3132 | 01/09/00 | 14:06:44 |
| SC5PU238 | FLG | 664 | 01/09/00 | 14:12:34 |
| SC5PU238 | INP | 6689 | 01/09/00 | 14:12:42 |
| SC5PU238 | OUT | 15352 | 01/09/00 | 14:12:54 |
| SC5PU238 | PTI | 1311 | 01/09/00 | 14:12:54 |
| SC5PU238 | VEC | 3132 | 01/09/00 | 14:12:54 |
| SC5PU240 | FLG | 664 | 01/09/00 | 14:26:06 |
| SC5PU240 | INP | 6691 | 01/09/00 | 14:26:14 |
| SC5PU240 | OUT | 15352 | 01/09/00 | 14:26:28 |
| SC5PU240 | PTI | 1311 | 01/09/00 | 14:26:28 |
| SC5PU240 | VEC | 3132 | 01/09/00 | 14:26:28 |
| SC5TC99 | FLG | 663 | 01/09/00 | 14:30:42 |
| SC5TC99 | INP | 6688 | 01/09/00 | 14:30:52 |
| SC5TC99 | OUT | 14127 | 01/09/00 | 14:31:02 |
| SC5TC99 | PTI | 1311 | 01/09/00 | 14:31:02 |
| SC5TC99 | VEC | 3132 | 01/09/00 | 14:31:02 |
| SC5TH229 | FLG | 664 | 01/09/00 | 14:36:32 |
| SC5TH229 | INP | 6691 | 01/09/00 | 14:36:44 |
| SC5TH229 | OUT | 15425 | 01/09/00 | 14:37:00 |
| SC5TH229 | PTI | 1311 | 01/09/00 | 14:37:00 |
| SC5TH229 | VEC | 3132 | 01/09/00 | 14:37:00 |
| SC5U232 | FLG | 664 | 01/09/00 | 14:42:06 |
| SC5U232 | INP | 6689 | 01/09/00 | 14:42:18 |
| SC5U232 | OUT | 15958 | 01/09/00 | 14:42:32 |
| SC5U232 | PTI | 1311 | 01/09/00 | 14:42:32 |

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|----------|-----|-------|----------|----------|
| SC5U232 | VEC | 3132 | 01/09/00 | 14:42:32 |
| SC5U233 | FLG | 664 | 01/09/00 | 14:48:34 |
| SC5U233 | INP | 6690 | 01/09/00 | 14:48:44 |
| SC5U233 | OUT | 15498 | 01/09/00 | 14:48:56 |
| SC5U233 | PTI | 1311 | 01/09/00 | 14:48:56 |
| SC5U233 | VEC | 3132 | 01/09/00 | 14:48:56 |
| SC5U234 | FLG | 664 | 01/09/00 | 14:54:56 |
| SC5U234 | INP | 6690 | 01/09/00 | 14:55:04 |
| SC5U234 | OUT | 14127 | 01/09/00 | 14:55:16 |
| SC5U234 | PTI | 1311 | 01/09/00 | 14:55:16 |
| SC5U234 | VEC | 3132 | 01/09/00 | 14:55:16 |
| SC5U236 | FLG | 664 | 01/09/00 | 15:00:36 |
| SC5U236 | INP | 6690 | 01/09/00 | 15:00:46 |
| SC5U236 | OUT | 14127 | 01/09/00 | 15:00:58 |
| SC5U236 | PTI | 1311 | 01/09/00 | 15:00:58 |
| SC5U236 | VEC | 3132 | 01/09/00 | 15:00:58 |
| SC5U238 | FLG | 664 | 01/09/00 | 15:06:30 |
| SC5U238 | INP | 6690 | 01/09/00 | 15:06:40 |
| SC5U238 | OUT | 15425 | 01/09/00 | 15:06:52 |
| SC5U238 | PTI | 1311 | 01/09/00 | 15:06:52 |
| SC5U238 | VEC | 3132 | 01/09/00 | 15:06:52 |
| SC6AC227 | FLG | 664 | 01/09/00 | 13:40:04 |
| SC6AC227 | INP | 6688 | 01/09/00 | 13:40:14 |
| SC6AC227 | OUT | 15498 | 01/09/00 | 13:40:26 |
| SC6AC227 | PTI | 1311 | 01/09/00 | 13:40:26 |
| SC6AC227 | VEC | 3132 | 01/09/00 | 13:40:26 |
| SC6AM241 | FLG | 664 | 01/09/00 | 13:46:06 |
| SC6AM241 | INP | 6690 | 01/09/00 | 13:46:36 |
| SC6AM241 | OUT | 15554 | 01/09/00 | 13:46:48 |
| SC6AM241 | PTI | 1311 | 01/09/00 | 13:46:48 |
| SC6AM241 | VEC | 3132 | 01/09/00 | 13:46:48 |
| SC6I129 | FLG | 664 | 01/09/00 | 14:01:44 |
| SC6I129 | INP | 6689 | 01/09/00 | 14:01:50 |
| SC6I129 | OUT | 14069 | 01/09/00 | 14:02:02 |
| SC6I129 | PTI | 1311 | 01/09/00 | 14:02:02 |
| SC6I129 | VEC | 3132 | 01/09/00 | 14:02:02 |
| SC6NP237 | FLG | 664 | 01/09/00 | 14:07:12 |
| SC6NP237 | INP | 6690 | 01/09/00 | 14:07:18 |
| SC6NP237 | OUT | 15352 | 01/09/00 | 14:07:30 |
| SC6NP237 | PTI | 1311 | 01/09/00 | 14:07:30 |
| SC6NP237 | VEC | 3132 | 01/09/00 | 14:07:30 |
| SC6PU238 | FLG | 664 | 01/09/00 | 14:13:42 |
| SC6PU238 | INP | 6689 | 01/09/00 | 14:14:30 |
| SC6PU238 | OUT | 15352 | 01/09/00 | 14:14:42 |
| SC6PU238 | PTI | 1311 | 01/09/00 | 14:14:42 |
| SC6PU238 | VEC | 3132 | 01/09/00 | 14:14:42 |
| SC6TC99 | FLG | 663 | 01/09/00 | 14:31:30 |
| SC6TC99 | INP | 6688 | 01/09/00 | 14:31:42 |
| SC6TC99 | OUT | 14127 | 01/09/00 | 14:31:54 |
| SC6TC99 | PTI | 1311 | 01/09/00 | 14:31:54 |
| SC6TC99 | VEC | 3132 | 01/09/00 | 14:31:54 |
| SC6U232 | FLG | 664 | 01/09/00 | 14:43:14 |
| SC6U232 | INP | 6689 | 01/09/00 | 14:43:20 |
| SC6U232 | OUT | 15958 | 01/09/00 | 14:43:34 |
| SC6U232 | PTI | 1311 | 01/09/00 | 14:43:34 |
| SC6U232 | VEC | 3132 | 01/09/00 | 14:43:34 |
| SC6U233 | FLG | 664 | 01/09/00 | 14:49:36 |
| SC6U233 | INP | 6690 | 01/09/00 | 14:49:44 |
| SC6U233 | OUT | 15498 | 01/09/00 | 14:50:02 |
| SC6U233 | PTI | 1311 | 01/09/00 | 14:50:02 |
| SC6U233 | VEC | 3132 | 01/09/00 | 14:50:02 |
| SC6U234 | FLG | 664 | 01/09/00 | 14:55:48 |

| | | | | |
|---------|-----|-------|----------|----------|
| SC6U234 | INP | 6690 | 01/09/00 | 14:55:58 |
| SC6U234 | OUT | 14127 | 01/09/00 | 14:56:10 |
| SC6U234 | PTI | 1311 | 01/09/00 | 14:56:10 |
| SC6U234 | VEC | 3132 | 01/09/00 | 14:56:10 |
| SC6U236 | FLG | 664 | 01/09/00 | 15:01:32 |
| SC6U236 | INP | 6690 | 01/09/00 | 15:01:40 |
| SC6U236 | OUT | 14127 | 01/09/00 | 15:01:52 |
| SC6U236 | PTI | 1311 | 01/09/00 | 15:01:52 |
| SC6U236 | VEC | 3132 | 01/09/00 | 15:01:52 |
| SC6U238 | FLG | 664 | 01/09/00 | 15:07:38 |
| SC6U238 | INP | 6690 | 01/09/00 | 15:07:48 |
| SC6U238 | OUT | 15425 | 01/09/00 | 15:08:02 |
| SC6U238 | PTI | 1311 | 01/09/00 | 15:08:02 |
| SC6U238 | VEC | 3132 | 01/09/00 | 15:08:02 |

ATTACHMENT I. DOCUMENT INPUT REFERENCE SHEETS

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|---|------------|--------------|--|--|----------------------|---------------------|--------------------------|--------------|--|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | 3. Section | Unqual. | | | | | From Uncontrolled Source | Un-confirmed | |
| 1. MO9912SPAING06.033. Ingestion Exposure Pathway Parameters. Submittal date: 12/22/1999. | Entire | TBV-3958 | 4.1 Data and Parameters | Parameter Values for: Eggs Grow Time Beef Grow time Milk Grow Time Leafy Vegetables Holdup Other (Root) Vegetables holdup Fruit Holdup Grain Holdup Poultry Holdup Eggs Holdup Beef Holdup Milk Holdup Poultry - Feed Storage time Eggs - Feed Storage Time Beef - Feed Storage Time Milk - Feed Storage Time Poultry - Dietary Fraction Eggs - Dietary Fraction Beef - Dietary Fraction Milk - Dietary Fraction Reason for TBV: AMR pending approval. | 1 | x | N/A | x | |

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|--|--------------|--|--------------------------------|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 2. | MO9912SPACON05.001. Recommended Distribution-based and Fixed (Mean) Consumption Parameters for Locally Produced Food by Type and Tap Water. Submittal date: 12/13/1999. | Entire | TBV- 3957 | 4.1 Data and Paramete rs | Parameter Values for: Leafy Vegetable Consumption Rate Root Vegetable Consumption Rate Grains Consumption Rate Fruit Consumption Rate Poultry Consumption Rate Meat Consumption Rate Fish Consumption Rate Eggs Consumption Rate Milk Consumption Rate Tap Water Consumption Rate Reason for TBV: AMR pending approval. | 1 | x | N/A | x |

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|---|--------------|--|-------------------------|--|---------------------|---------------|--------------------------|--------------|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | | 3. Section | | | | | Unqual. | From Uncontrolled Source | Un-confirmed |
| 3. | MO9910RIB00061.000. Input Parameter Values for External and Inhalation Radiation Exposure Analysis. Submittal date: 10/7/99. | Entire | Qualified | 4.1 Data and Parameters | Parameter Values for: Exposure from Inhalation: Mass Loading (grams/m3) Inhalation Exposure Time (hours/year) Chronic Breathing Rate (m3/day) External Ground Exposure: Soil Exposure Time (hours/year) Home Irrigation Rate (inches/year) Duration of Home Irrigation (months/year) | N/A | N/A | N/A | N/A |
| 4. | MO9911RIB00065.000. Parameter Values for Transfer Coefficients. Submittal date: 11/12/99 | Entire | Qualified | 4.1 Data and Parameters | Parameter Values for: Transfer parameter values in input data file FTRANS.DAT Soil-to-plant transfer scale factor Animal uptake scale factor | N/A | N/A | N/A | N/A |

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|---|------------|--------------|--|--|----------------------|---------------------|--------------------------|--------------|--|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | 3. Section | Unqual. | | | | | From Uncontrolled Source | Un-confirmed | |
| 5. MO9911RIB00064.000. Environmental Transport Parameters for Dose Assessment. Submittal date: 11/12/99. | Entire | Qualified | 4.1 Data and Parameters | Parameter values in input file DEFAULT.IN Deposition velocity (m/sec) in FTRANS.DAT Resuspension factor (1/m) Fraction of plant roots in surface soil Fraction of plant roots in deep soil Surface soil density (kg/m ²): soil mass per unit area for surface soil Deep soil density (kg/m ³): soil mass per unit volume for deep soil Soil ingestion rate (mg/day) | N/A | N/A | N/A | N/A | |
| 6. MO9911RIB00066.000. Parameter Values for Internal and External Dose Conversion Factors. Submittal date: 11/12/99. | Entire | Qualified | 4.1 Data and Parameters | External dose conversion factors data file, GRDF.DAT Internal dose conversion factors data file, DOSINC.DAT | N/A | N/A | N/A | N/A | |
| 7. SN9912T0512299.001. Leaching Coefficients for GENII-S Code. Submittal date: 12/06/99. | Entire | TBV-3956 | 4.1 Data and Parameters | Leaching factors in input data file, FTRANS.DAT Reason for TBV: AMR pending approval. | 1 | x | N/A | x | |

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|------------|------------------------|--|--|----------------------|---------------------|--------------------------|--------------|--|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | 3. Section | Unqual. | | | | | From Uncontrolled Source | Un-confirmed | |
| 8. CRWMS M&O 1998. <i>Software Qualification Report (SQR): GENII-S 1.485 Environmental Radiation Dosimetry Software System, Version 1.485 (CSCI: 30034 V1.4.8.5).</i> Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19980715.0029. | Entire | Qualified | 3. | Documents usage of qualified software. | N/A | N/A | N/A | N/A | |
| 9. CRWMS M&O 1999a. <i>Development Plan for Non-Disruptive Event Biosphere Dose Conversion Factors, Rev. 1 (TDP-MGR-MD-000010).</i> Las Vegas, Nevada: CRWMS M&O. ACC: TBD | Entire | N/A Reference only. | 1. | Development plan for this analysis. | N/A | N/A | N/A | N/A | |
| 10. CRWMS M&O 1999b. <i>Activity Evaluation: Scientific Investigation of Radiological Doses in Biosphere.</i> B00000000-01717-2200-00169. Rev. 4. Las Vegas, Nevada: CRWMS M&O. ACC: MOL.19991207.0225. | Entire | N/A Reference only. | 2. | Activity evaluation for this analysis. | N/A | N/A | N/A | N/A | |

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
DOCUMENT INPUT REFERENCE SHEET

| 1. Document Identifier No./Rev.: ANL-MGR-MD-000009/Rev. 00 | | Change: 0 | Title: Non-Disruptive Event Biosphere Dose Conversion Factors | | | | | | |
|--|---|--------------|--|--------------------|--|---------------------|--------------------------|--------------|-----|
| Input Document | | | 4. Input Status | 5. Section Used in | 6. Input Description | 7. TBV/TBD Priority | 8. TBV Due To | | |
| 2. Technical Product Input Source Title and Identifier(s) with Version | 3. Section | Unqual. | | | | | From Uncontrolled Source | Un-confirmed | |
| 11. | DOE (U.S. Department of Energy) 1998. <i>Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program.</i> DOE/RW-0333P REV. 8. Washington, D.C. U.S. Department of Energy. ACC:MOL.19980601.0022. | Entire | N/A Reference only. | 2. | Quality Assurance requirements. | N/A | N/A | N/A | N/A |
| 12. | Leigh, C.D., Thompson, S.D., Campbell, J.E., Longsine, D.E., Kennedy, R.A., and Napier , B.A. 1993. <i>User's Guide for GENII-S: A Code for Statistical and Deterministic Simulations of Radiation Doses to Humans from Radionuclides in the Environment.</i> SAND91-0561. Albuquerque, New Mexico: Sandia National Laboratories. TIC 231133. | Entire | N/A Reference only. | 3. | Provides general information on the software used in the analysis. | N/A | N/A | N/A | N/A |
| 13. | 10 CFR 20. Energy: Standards for Protection Against Radiation. | 20.1003 | N/A Reference only. | 4.2.1 | Provides definition of the TEDE. | N/A | N/A | N/A | N/A |

AP-3.15Q.1

Rev. 06/30/199

ATTACHMENT II. ACRONYMS AND ABBREVIATIONS

Acronyms

| | |
|---------|---|
| AMR | Analysis and Model Report |
| BDCF | Biosphere Dose Conversion Factor |
| CRWMS | Civilian Radioactive Waste Management System |
| DTN | Data Tracking Number |
| ICRP-30 | International Commission on Radiological Protection, Publication 30 |
| M&O | Management and Operating |
| NCRP | National Council on Radiation Protection and Measurement |
| OCRWM | Office of Civilian Radioactive Waste Management |
| PAO | Performance Assessment Organization |
| PMR | Process Model Report |
| RSICC | Radiation Safety Information Computational Center |
| TBV | To Be Verified |
| TDMS | Technical Data Management System |
| TEDE | Total Effective Dose Equivalent |
| TSPA | Total System Performance Assessment |

Abbreviations

| | |
|---------|--------------------|
| Ac | Actinium |
| Am | Americium |
| C | Carbon |
| I | Iodine |
| mrem/yr | milli-rem per year |

| | |
|-------|----------------------|
| Np | Neptunium |
| pCi/L | pico Curie per liter |
| Pu | Plutonium |
| Tc | Technetium |
| Th | Thorium |
| U | Uranium |

ATTACHMENT III. LIST OF FILES ON CD-ROM

..\ (root directory)

README DOC 22,000 1/4/00 1:35p

..\RR_data\ (input and output files for Reasonable Representation analysis)

| | | | | |
|----------|-----|--------|----------|----------|
| RR1AC227 | FLG | 712 | 01/09/00 | 12:55:18 |
| RR1AC227 | INP | 15447 | 01/09/00 | 12:55:28 |
| RR1AC227 | OUT | 832 | 01/09/00 | 12:55:52 |
| RR1AC227 | PTI | 8173 | 01/09/00 | 12:55:52 |
| RR1AC227 | RST | 112189 | 01/09/00 | 12:56:26 |
| RR1AC227 | VEC | 38112 | 01/09/00 | 12:55:52 |
| RR1AM241 | FLG | 712 | 01/08/00 | 16:10:14 |
| RR1AM241 | INP | 15447 | 01/08/00 | 16:10:14 |
| RR1AM241 | OUT | 832 | 12/28/99 | 18:55:02 |
| RR1AM241 | PTI | 8173 | 12/28/99 | 18:55:02 |
| RR1AM241 | RST | 112189 | 01/08/00 | 16:12:52 |
| RR1AM241 | VEC | 38112 | 12/28/99 | 18:55:02 |
| RR1AM243 | FLG | 712 | 01/08/00 | 16:27:38 |
| RR1AM243 | INP | 15447 | 01/08/00 | 16:27:48 |
| RR1AM243 | OUT | 832 | 01/08/00 | 16:28:12 |
| RR1AM243 | PTI | 8173 | 01/08/00 | 16:28:12 |
| RR1AM243 | RST | 112189 | 01/08/00 | 16:29:08 |
| RR1AM243 | VEC | 38112 | 01/08/00 | 16:28:12 |
| RR1C14 | FLG | 710 | 01/08/00 | 16:47:28 |
| RR1C14 | INP | 15447 | 01/08/00 | 16:47:38 |
| RR1C14 | OUT | 832 | 01/08/00 | 16:47:56 |
| RR1C14 | PTI | 8173 | 01/08/00 | 16:47:56 |
| RR1C14 | RST | 112187 | 01/08/00 | 16:51:54 |
| RR1C14 | VEC | 38112 | 01/08/00 | 16:47:56 |
| RR1I129 | FLG | 712 | 01/08/00 | 17:01:50 |
| RR1I129 | INP | 15447 | 01/08/00 | 17:02:00 |
| RR1I129 | OUT | 832 | 01/08/00 | 17:02:16 |
| RR1I129 | PTI | 8173 | 01/08/00 | 17:02:16 |
| RR1I129 | RST | 112188 | 01/08/00 | 17:03:06 |
| RR1I129 | VEC | 38112 | 01/08/00 | 17:02:16 |
| RR1NP237 | FLG | 712 | 01/08/00 | 17:11:30 |
| RR1NP237 | INP | 15447 | 01/08/00 | 17:11:40 |
| RR1NP237 | OUT | 832 | 01/08/00 | 17:11:58 |
| RR1NP237 | PTI | 8173 | 01/08/00 | 17:11:58 |
| RR1NP237 | RST | 112189 | 01/08/00 | 17:12:56 |
| RR1NP237 | VEC | 38112 | 01/08/00 | 17:11:58 |
| RR1PU238 | FLG | 712 | 01/08/00 | 19:44:42 |
| RR1PU238 | INP | 15447 | 01/08/00 | 19:44:54 |
| RR1PU238 | OUT | 832 | 01/08/00 | 19:45:12 |
| RR1PU238 | PTI | 8173 | 01/08/00 | 19:45:12 |
| RR1PU238 | RST | 112189 | 01/08/00 | 19:46:44 |
| RR1PU238 | VEC | 38112 | 01/08/00 | 19:45:12 |
| RR1PU239 | FLG | 712 | 01/08/00 | 17:52:20 |
| RR1PU239 | INP | 15447 | 01/08/00 | 17:52:30 |
| RR1PU239 | OUT | 832 | 01/08/00 | 17:52:48 |
| RR1PU239 | PTI | 8173 | 01/08/00 | 17:52:48 |
| RR1PU239 | RST | 112189 | 01/08/00 | 17:53:56 |
| RR1PU239 | VEC | 38112 | 01/08/00 | 17:52:48 |
| RR1PU240 | FLG | 712 | 01/08/00 | 19:54:56 |
| RR1PU240 | INP | 15447 | 01/08/00 | 19:56:28 |
| RR1PU240 | OUT | 832 | 01/08/00 | 19:56:48 |
| RR1PU240 | PTI | 8173 | 01/08/00 | 19:56:48 |
| RR1PU240 | RST | 112189 | 01/08/00 | 19:57:22 |

| | | | | |
|----------|-----|--------|----------|----------|
| RR1PU240 | VEC | 38112 | 01/08/00 | 19:56:48 |
| RR1TC99 | FLG | 711 | 01/08/00 | 18:13:02 |
| RR1TC99 | INP | 15447 | 01/08/00 | 18:13:12 |
| RR1TC99 | OUT | 832 | 01/08/00 | 18:13:28 |
| RR1TC99 | PTI | 8173 | 01/08/00 | 18:13:28 |
| RR1TC99 | RST | 112188 | 01/08/00 | 18:14:24 |
| RR1TC99 | VEC | 38112 | 01/08/00 | 18:13:28 |
| RR1TH229 | FLG | 712 | 01/08/00 | 18:22:08 |
| RR1TH229 | INP | 15447 | 01/08/00 | 18:22:18 |
| RR1TH229 | OUT | 832 | 01/08/00 | 18:22:40 |
| RR1TH229 | PTI | 8173 | 01/08/00 | 18:22:40 |
| RR1TH229 | RST | 112189 | 01/08/00 | 18:23:46 |
| RR1TH229 | VEC | 38112 | 01/08/00 | 18:22:40 |
| RR1U232 | FLG | 712 | 01/08/00 | 18:48:46 |
| RR1U232 | INP | 15447 | 01/08/00 | 18:48:58 |
| RR1U232 | OUT | 1000 | 01/08/00 | 18:49:30 |
| RR1U232 | PTI | 8173 | 01/08/00 | 18:49:30 |
| RR1U232 | RST | 112188 | 01/08/00 | 18:50:40 |
| RR1U232 | VEC | 38112 | 01/08/00 | 18:49:30 |
| RR1U233 | FLG | 712 | 01/08/00 | 19:00:14 |
| RR1U233 | INP | 15447 | 01/08/00 | 19:00:22 |
| RR1U233 | OUT | 832 | 01/08/00 | 19:00:48 |
| RR1U233 | PTI | 8173 | 01/08/00 | 19:00:48 |
| RR1U233 | RST | 112188 | 01/08/00 | 19:01:46 |
| RR1U233 | VEC | 38112 | 01/08/00 | 19:00:48 |
| RR1U234 | FLG | 712 | 01/08/00 | 19:10:48 |
| RR1U234 | INP | 15447 | 01/08/00 | 19:10:58 |
| RR1U234 | OUT | 832 | 01/08/00 | 19:11:14 |
| RR1U234 | PTI | 8173 | 01/08/00 | 19:11:14 |
| RR1U234 | RST | 112188 | 01/08/00 | 19:12:30 |
| RR1U234 | VEC | 38112 | 01/08/00 | 19:11:14 |
| RR1U236 | FLG | 712 | 01/08/00 | 19:20:28 |
| RR1U236 | INP | 15447 | 01/08/00 | 19:20:42 |
| RR1U236 | OUT | 832 | 01/08/00 | 19:21:00 |
| RR1U236 | PTI | 8173 | 01/08/00 | 19:21:00 |
| RR1U236 | RST | 112188 | 01/08/00 | 19:22:08 |
| RR1U236 | VEC | 38112 | 01/08/00 | 19:21:00 |
| RR1U238 | FLG | 712 | 01/08/00 | 19:29:56 |
| RR1U238 | INP | 15447 | 01/08/00 | 19:30:08 |
| RR1U238 | OUT | 832 | 01/08/00 | 19:30:30 |
| RR1U238 | PTI | 8173 | 01/08/00 | 19:30:30 |
| RR1U238 | RST | 112188 | 01/08/00 | 19:31:32 |
| RR1U238 | VEC | 38112 | 01/08/00 | 19:30:30 |
| RR2AC227 | FLG | 712 | 01/09/00 | 12:56:40 |
| RR2AC227 | INP | 15447 | 01/09/00 | 12:56:50 |
| RR2AC227 | OUT | 832 | 01/09/00 | 12:57:12 |
| RR2AC227 | PTI | 8173 | 01/09/00 | 12:57:12 |
| RR2AC227 | RST | 112189 | 01/09/00 | 12:57:42 |
| RR2AC227 | VEC | 38112 | 01/09/00 | 12:57:12 |
| RR2AM241 | FLG | 712 | 01/08/00 | 16:13:08 |
| RR2AM241 | INP | 15449 | 01/08/00 | 16:13:20 |
| RR2AM241 | OUT | 888 | 01/08/00 | 16:13:52 |
| RR2AM241 | PTI | 8173 | 01/08/00 | 16:13:52 |
| RR2AM241 | RST | 112189 | 01/08/00 | 16:14:44 |
| RR2AM241 | VEC | 38112 | 01/08/00 | 16:13:52 |
| RR2AM243 | FLG | 712 | 01/08/00 | 16:29:24 |
| RR2AM243 | INP | 15449 | 01/08/00 | 16:29:46 |
| RR2AM243 | OUT | 832 | 01/08/00 | 16:30:34 |
| RR2AM243 | PTI | 8173 | 01/08/00 | 16:30:34 |
| RR2AM243 | RST | 112189 | 01/08/00 | 16:31:18 |
| RR2AM243 | VEC | 38112 | 01/08/00 | 16:30:34 |
| RR2C14 | FLG | 710 | 01/08/00 | 16:52:10 |

| | | | | |
|----------|-----|--------|----------|----------|
| RR2C14 | INP | 15449 | 01/08/00 | 16:52:22 |
| RR2C14 | OUT | 832 | 01/08/00 | 16:52:44 |
| RR2C14 | PTI | 8173 | 01/08/00 | 16:52:44 |
| RR2C14 | RST | 112187 | 01/08/00 | 16:53:36 |
| RR2C14 | VEC | 38112 | 01/08/00 | 16:52:44 |
| RR2I129 | FLG | 712 | 01/08/00 | 17:03:22 |
| RR2I129 | INP | 15447 | 01/08/00 | 17:03:34 |
| RR2I129 | OUT | 832 | 01/08/00 | 17:03:52 |
| RR2I129 | PTI | 8173 | 01/08/00 | 17:03:52 |
| RR2I129 | RST | 112188 | 01/08/00 | 17:04:44 |
| RR2I129 | VEC | 38112 | 01/08/00 | 17:03:52 |
| RR2NP237 | FLG | 712 | 01/08/00 | 17:13:24 |
| RR2NP237 | INP | 15447 | 01/08/00 | 17:13:32 |
| RR2NP237 | OUT | 832 | 01/08/00 | 17:13:50 |
| RR2NP237 | PTI | 8173 | 01/08/00 | 17:13:50 |
| RR2NP237 | RST | 112189 | 01/08/00 | 17:14:28 |
| RR2NP237 | VEC | 38112 | 01/08/00 | 17:13:50 |
| RR2PU238 | FLG | 712 | 01/08/00 | 19:47:24 |
| RR2PU238 | INP | 15448 | 01/08/00 | 19:47:36 |
| RR2PU238 | OUT | 832 | 01/08/00 | 19:47:56 |
| RR2PU238 | PTI | 8173 | 01/08/00 | 19:47:56 |
| RR2PU238 | RST | 112189 | 01/08/00 | 19:48:32 |
| RR2PU238 | VEC | 38112 | 01/08/00 | 19:47:56 |
| RR2PU239 | FLG | 712 | 01/08/00 | 17:54:12 |
| RR2PU239 | INP | 15449 | 01/08/00 | 17:54:24 |
| RR2PU239 | OUT | 832 | 01/08/00 | 17:54:42 |
| RR2PU239 | PTI | 8173 | 01/08/00 | 17:54:42 |
| RR2PU239 | RST | 112189 | 01/08/00 | 17:55:26 |
| RR2PU239 | VEC | 38112 | 01/08/00 | 17:54:42 |
| RR2PU240 | FLG | 712 | 01/08/00 | 19:57:38 |
| RR2PU240 | INP | 15449 | 01/08/00 | 19:57:50 |
| RR2PU240 | OUT | 832 | 01/08/00 | 19:58:12 |
| RR2PU240 | PTI | 8173 | 01/08/00 | 19:58:12 |
| RR2PU240 | RST | 112189 | 01/08/00 | 20:00:30 |
| RR2PU240 | VEC | 38112 | 01/08/00 | 19:58:12 |
| RR2TC99 | FLG | 711 | 01/08/00 | 18:14:50 |
| RR2TC99 | INP | 15447 | 01/08/00 | 18:15:00 |
| RR2TC99 | OUT | 832 | 01/08/00 | 18:15:18 |
| RR2TC99 | PTI | 8173 | 01/08/00 | 18:15:18 |
| RR2TC99 | RST | 112188 | 01/08/00 | 18:16:00 |
| RR2TC99 | VEC | 38112 | 01/08/00 | 18:15:18 |
| RR2TH229 | FLG | 712 | 01/08/00 | 18:24:02 |
| RR2TH229 | INP | 15449 | 01/08/00 | 18:24:14 |
| RR2TH229 | OUT | 832 | 01/08/00 | 18:25:14 |
| RR2TH229 | PTI | 8173 | 01/08/00 | 18:25:14 |
| RR2TH229 | RST | 112189 | 01/08/00 | 18:26:18 |
| RR2TH229 | VEC | 38112 | 01/08/00 | 18:25:14 |
| RR2U232 | FLG | 712 | 01/08/00 | 18:50:56 |
| RR2U232 | INP | 15447 | 01/08/00 | 18:51:04 |
| RR2U232 | OUT | 1000 | 01/08/00 | 18:51:36 |
| RR2U232 | PTI | 8173 | 01/08/00 | 18:51:36 |
| RR2U232 | RST | 112188 | 01/08/00 | 18:52:28 |
| RR2U232 | VEC | 38112 | 01/08/00 | 18:51:36 |
| RR2U233 | FLG | 712 | 01/08/00 | 19:02:04 |
| RR2U233 | INP | 15447 | 01/08/00 | 19:02:12 |
| RR2U233 | OUT | 832 | 01/08/00 | 19:02:40 |
| RR2U233 | PTI | 8173 | 01/08/00 | 19:02:40 |
| RR2U233 | RST | 112188 | 01/08/00 | 19:03:22 |
| RR2U233 | VEC | 38112 | 01/08/00 | 19:02:40 |
| RR2U234 | FLG | 712 | 01/08/00 | 19:12:46 |
| RR2U234 | INP | 15447 | 01/08/00 | 19:12:54 |
| RR2U234 | OUT | 832 | 01/08/00 | 19:13:12 |

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| RR2U234 | PTI | 8173 | 01/08/00 | 19:13:12 |
| RR2U234 | RST | 112188 | 01/08/00 | 19:13:52 |
| RR2U234 | VEC | 38112 | 01/08/00 | 19:13:12 |
| RR2U236 | FLG | 712 | 01/08/00 | 19:22:24 |
| RR2U236 | INP | 15447 | 01/08/00 | 19:22:34 |
| RR2U236 | OUT | 832 | 01/08/00 | 19:22:50 |
| RR2U236 | PTI | 8173 | 01/08/00 | 19:22:50 |
| RR2U236 | RST | 112188 | 01/08/00 | 19:23:38 |
| RR2U236 | VEC | 38112 | 01/08/00 | 19:22:50 |
| RR2U238 | FLG | 712 | 01/08/00 | 19:33:44 |
| RR2U238 | INP | 15447 | 01/08/00 | 19:33:54 |
| RR2U238 | OUT | 832 | 01/08/00 | 19:34:20 |
| RR2U238 | PTI | 8173 | 01/08/00 | 19:34:20 |
| RR2U238 | RST | 112188 | 01/08/00 | 19:33:28 |
| RR2U238 | VEC | 38112 | 01/08/00 | 19:34:20 |
| RR3AC227 | FLG | 712 | 01/09/00 | 12:57:56 |
| RR3AC227 | INP | 15448 | 01/09/00 | 12:58:04 |
| RR3AC227 | OUT | 832 | 01/09/00 | 12:58:28 |
| RR3AC227 | PTI | 8173 | 01/09/00 | 12:58:28 |
| RR3AC227 | RST | 112189 | 01/09/00 | 12:59:02 |
| RR3AC227 | VEC | 38112 | 01/09/00 | 12:58:28 |
| RR3AM241 | FLG | 712 | 01/08/00 | 16:15:02 |
| RR3AM241 | INP | 15449 | 01/08/00 | 16:15:10 |
| RR3AM241 | OUT | 888 | 01/08/00 | 16:15:48 |
| RR3AM241 | PTI | 8173 | 01/08/00 | 16:15:48 |
| RR3AM241 | RST | 112189 | 01/08/00 | 16:16:32 |
| RR3AM241 | VEC | 38112 | 01/08/00 | 16:15:48 |
| RR3AM243 | FLG | 712 | 01/08/00 | 16:31:34 |
| RR3AM243 | INP | 15450 | 01/08/00 | 16:31:46 |
| RR3AM243 | OUT | 832 | 01/08/00 | 16:32:56 |
| RR3AM243 | PTI | 8173 | 01/08/00 | 16:32:56 |
| RR3AM243 | RST | 112189 | 01/08/00 | 16:33:58 |
| RR3AM243 | VEC | 38112 | 01/08/00 | 16:32:56 |
| RR3C14 | FLG | 710 | 01/08/00 | 16:53:52 |
| RR3C14 | INP | 15450 | 01/08/00 | 16:54:02 |
| RR3C14 | OUT | 832 | 01/08/00 | 16:54:28 |
| RR3C14 | PTI | 8173 | 01/08/00 | 16:54:28 |
| RR3C14 | RST | 112187 | 01/08/00 | 16:55:36 |
| RR3C14 | VEC | 38112 | 01/08/00 | 16:54:28 |
| RR3I129 | FLG | 712 | 01/08/00 | 17:05:04 |
| RR3I129 | INP | 15447 | 01/08/00 | 17:05:14 |
| RR3I129 | OUT | 832 | 01/08/00 | 17:05:30 |
| RR3I129 | PTI | 8173 | 01/08/00 | 17:05:30 |
| RR3I129 | RST | 112188 | 01/08/00 | 17:06:16 |
| RR3I129 | VEC | 38112 | 01/08/00 | 17:05:30 |
| RR3NP237 | FLG | 712 | 01/08/00 | 17:14:46 |
| RR3NP237 | INP | 15447 | 01/08/00 | 17:14:56 |
| RR3NP237 | OUT | 832 | 01/08/00 | 17:15:16 |
| RR3NP237 | PTI | 8173 | 01/08/00 | 17:15:16 |
| RR3NP237 | RST | 112189 | 01/08/00 | 17:16:14 |
| RR3NP237 | VEC | 38112 | 01/08/00 | 17:15:16 |
| RR3PU238 | FLG | 712 | 01/08/00 | 19:49:00 |
| RR3PU238 | INP | 15448 | 01/08/00 | 19:49:14 |
| RR3PU238 | OUT | 832 | 01/08/00 | 19:49:36 |
| RR3PU238 | PTI | 8173 | 01/08/00 | 19:49:36 |
| RR3PU238 | RST | 112189 | 01/08/00 | 19:50:30 |
| RR3PU238 | VEC | 38112 | 01/08/00 | 19:49:36 |
| RR3PU239 | FLG | 712 | 01/08/00 | 17:55:42 |
| RR3PU239 | INP | 15449 | 01/08/00 | 17:55:52 |
| RR3PU239 | OUT | 832 | 01/08/00 | 17:56:14 |
| RR3PU239 | PTI | 8173 | 01/08/00 | 17:56:14 |
| RR3PU239 | RST | 112189 | 01/08/00 | 17:57:00 |

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| RR3PU239 | VEC | 38112 | 01/08/00 | 17:56:14 |
| RR3PU240 | FLG | 712 | 01/08/00 | 20:01:36 |
| RR3PU240 | INP | 15449 | 01/08/00 | 20:01:46 |
| RR3PU240 | OUT | 832 | 01/08/00 | 20:02:14 |
| RR3PU240 | PTI | 8173 | 01/08/00 | 20:02:14 |
| RR3PU240 | RST | 112189 | 01/08/00 | 20:02:48 |
| RR3PU240 | VEC | 38112 | 01/08/00 | 20:02:14 |
| RR3TC99 | FLG | 711 | 01/08/00 | 18:16:14 |
| RR3TC99 | INP | 15447 | 01/08/00 | 18:16:24 |
| RR3TC99 | OUT | 832 | 01/08/00 | 18:16:40 |
| RR3TC99 | PTI | 8173 | 01/08/00 | 18:16:40 |
| RR3TC99 | RST | 112188 | 01/08/00 | 18:17:28 |
| RR3TC99 | VEC | 38112 | 01/08/00 | 18:16:40 |
| RR3TH229 | FLG | 712 | 01/08/00 | 18:26:34 |
| RR3TH229 | INP | 15450 | 01/08/00 | 18:26:44 |
| RR3TH229 | OUT | 832 | 01/08/00 | 18:28:30 |
| RR3TH229 | PTI | 8173 | 01/08/00 | 18:28:30 |
| RR3TH229 | RST | 112189 | 01/08/00 | 18:29:58 |
| RR3TH229 | VEC | 38112 | 01/08/00 | 18:28:30 |
| RR3U232 | FLG | 712 | 01/08/00 | 18:52:42 |
| RR3U232 | INP | 15448 | 01/08/00 | 18:52:52 |
| RR3U232 | OUT | 1000 | 01/08/00 | 18:53:30 |
| RR3U232 | PTI | 8173 | 01/08/00 | 18:53:30 |
| RR3U232 | RST | 112188 | 01/08/00 | 18:54:20 |
| RR3U232 | VEC | 38112 | 01/08/00 | 18:53:30 |
| RR3U233 | FLG | 712 | 01/08/00 | 19:03:40 |
| RR3U233 | INP | 15448 | 01/08/00 | 19:03:50 |
| RR3U233 | OUT | 832 | 01/08/00 | 19:04:18 |
| RR3U233 | PTI | 8173 | 01/08/00 | 19:04:18 |
| RR3U233 | RST | 112188 | 01/08/00 | 19:05:06 |
| RR3U233 | VEC | 38112 | 01/08/00 | 19:04:18 |
| RR3U234 | FLG | 712 | 01/08/00 | 19:14:08 |
| RR3U234 | INP | 15448 | 01/08/00 | 19:14:20 |
| RR3U234 | OUT | 832 | 01/08/00 | 19:14:38 |
| RR3U234 | PTI | 8173 | 01/08/00 | 19:14:38 |
| RR3U234 | RST | 112188 | 01/08/00 | 19:15:32 |
| RR3U234 | VEC | 38112 | 01/08/00 | 19:14:38 |
| RR3U236 | FLG | 712 | 01/08/00 | 19:23:52 |
| RR3U236 | INP | 15448 | 01/08/00 | 19:24:02 |
| RR3U236 | OUT | 832 | 01/08/00 | 19:24:20 |
| RR3U236 | PTI | 8173 | 01/08/00 | 19:24:20 |
| RR3U236 | RST | 112188 | 01/08/00 | 19:25:10 |
| RR3U236 | VEC | 38112 | 01/08/00 | 19:24:20 |
| RR3U238 | FLG | 712 | 01/08/00 | 19:35:26 |
| RR3U238 | INP | 15448 | 01/08/00 | 19:35:40 |
| RR3U238 | OUT | 832 | 01/08/00 | 19:36:04 |
| RR3U238 | PTI | 8173 | 01/08/00 | 19:36:04 |
| RR3U238 | RST | 112188 | 01/08/00 | 19:36:50 |
| RR3U238 | VEC | 38112 | 01/08/00 | 19:36:04 |
| RR4AC227 | FLG | 712 | 01/09/00 | 12:59:16 |
| RR4AC227 | INP | 15448 | 01/09/00 | 12:59:24 |
| RR4AC227 | OUT | 832 | 01/09/00 | 12:59:46 |
| RR4AC227 | PTI | 8173 | 01/09/00 | 12:59:46 |
| RR4AC227 | RST | 112189 | 01/09/00 | 13:00:20 |
| RR4AC227 | VEC | 38112 | 01/09/00 | 12:59:46 |
| RR4AM241 | FLG | 712 | 01/08/00 | 16:16:50 |
| RR4AM241 | INP | 15449 | 01/08/00 | 16:17:04 |
| RR4AM241 | OUT | 888 | 01/08/00 | 16:17:52 |
| RR4AM241 | PTI | 8173 | 01/08/00 | 16:17:52 |
| RR4AM241 | RST | 112189 | 01/08/00 | 16:18:32 |
| RR4AM241 | VEC | 38112 | 01/08/00 | 16:17:52 |
| RR4AM243 | FLG | 712 | 01/08/00 | 16:34:12 |

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| RR4AM243 | INP | 15450 | 01/08/00 | 16:34:22 |
| RR4AM243 | OUT | 832 | 01/08/00 | 16:36:04 |
| RR4AM243 | PTI | 8173 | 01/08/00 | 16:36:04 |
| RR4AM243 | RST | 112189 | 01/08/00 | 16:38:16 |
| RR4AM243 | VEC | 38112 | 01/08/00 | 16:36:04 |
| RR4C14 | FLG | 710 | 01/08/00 | 16:55:52 |
| RR4C14 | INP | 15450 | 01/08/00 | 16:56:04 |
| RR4C14 | OUT | 832 | 01/08/00 | 16:56:36 |
| RR4C14 | PTI | 8173 | 01/08/00 | 16:56:36 |
| RR4C14 | RST | 112187 | 01/08/00 | 16:57:16 |
| RR4C14 | VEC | 38112 | 01/08/00 | 16:56:36 |
| RR4I129 | FLG | 712 | 01/08/00 | 17:06:34 |
| RR4I129 | INP | 15447 | 01/08/00 | 17:06:58 |
| RR4I129 | OUT | 832 | 01/08/00 | 17:07:16 |
| RR4I129 | PTI | 8173 | 01/08/00 | 17:07:16 |
| RR4I129 | RST | 112188 | 01/08/00 | 17:08:10 |
| RR4I129 | VEC | 38112 | 01/08/00 | 17:07:16 |
| RR4NP237 | FLG | 712 | 01/08/00 | 17:16:28 |
| RR4NP237 | INP | 15447 | 01/08/00 | 17:16:38 |
| RR4NP237 | OUT | 832 | 01/08/00 | 17:16:58 |
| RR4NP237 | PTI | 8173 | 01/08/00 | 17:16:58 |
| RR4NP237 | RST | 112189 | 01/08/00 | 17:17:52 |
| RR4NP237 | VEC | 38112 | 01/08/00 | 17:16:58 |
| RR4PU238 | FLG | 712 | 01/08/00 | 19:50:50 |
| RR4PU238 | INP | 15448 | 01/08/00 | 19:51:00 |
| RR4PU238 | OUT | 832 | 01/08/00 | 19:51:22 |
| RR4PU238 | PTI | 8173 | 01/08/00 | 19:51:22 |
| RR4PU238 | RST | 112189 | 01/08/00 | 19:51:56 |
| RR4PU238 | VEC | 38112 | 01/08/00 | 19:51:22 |
| RR4PU239 | FLG | 712 | 01/08/00 | 17:57:14 |
| RR4PU239 | INP | 15449 | 01/08/00 | 17:57:22 |
| RR4PU239 | OUT | 832 | 01/08/00 | 17:57:48 |
| RR4PU239 | PTI | 8173 | 01/08/00 | 17:57:48 |
| RR4PU239 | RST | 112189 | 01/08/00 | 17:58:50 |
| RR4PU239 | VEC | 38112 | 01/08/00 | 17:57:48 |
| RR4PU240 | FLG | 712 | 01/08/00 | 20:03:10 |
| RR4PU240 | INP | 15449 | 01/08/00 | 20:03:20 |
| RR4PU240 | OUT | 832 | 01/08/00 | 20:03:52 |
| RR4PU240 | PTI | 8173 | 01/08/00 | 20:03:52 |
| RR4PU240 | RST | 112189 | 01/08/00 | 20:04:30 |
| RR4PU240 | VEC | 38112 | 01/08/00 | 20:03:52 |
| RR4TC99 | FLG | 711 | 01/08/00 | 18:17:46 |
| RR4TC99 | INP | 15447 | 01/08/00 | 18:17:54 |
| RR4TC99 | OUT | 832 | 01/08/00 | 18:18:12 |
| RR4TC99 | PTI | 8173 | 01/08/00 | 18:18:12 |
| RR4TC99 | RST | 112188 | 01/08/00 | 18:19:10 |
| RR4TC99 | VEC | 38112 | 01/08/00 | 18:18:12 |
| RR4TH229 | FLG | 712 | 01/08/00 | 18:30:12 |
| RR4TH229 | INP | 15450 | 01/08/00 | 18:30:22 |
| RR4TH229 | OUT | 832 | 01/08/00 | 18:33:08 |
| RR4TH229 | PTI | 8173 | 01/08/00 | 18:33:08 |
| RR4TH229 | RST | 112189 | 01/08/00 | 18:34:24 |
| RR4TH229 | VEC | 38112 | 01/08/00 | 18:33:08 |
| RR4U232 | FLG | 712 | 01/08/00 | 18:54:36 |
| RR4U232 | INP | 15448 | 01/08/00 | 18:54:46 |
| RR4U232 | OUT | 1000 | 01/08/00 | 18:55:24 |
| RR4U232 | PTI | 8173 | 01/08/00 | 18:55:24 |
| RR4U232 | RST | 112188 | 01/08/00 | 18:56:10 |
| RR4U232 | VEC | 38112 | 01/08/00 | 18:55:24 |
| RR4U233 | FLG | 712 | 01/08/00 | 19:05:22 |
| RR4U233 | INP | 15448 | 01/08/00 | 19:05:30 |
| RR4U233 | OUT | 832 | 01/08/00 | 19:05:58 |

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| RR4U233 | PTI | 8173 | 01/08/00 | 19:05:58 |
| RR4U233 | RST | 112188 | 01/08/00 | 19:06:44 |
| RR4U233 | VEC | 38112 | 01/08/00 | 19:05:58 |
| RR4U234 | FLG | 712 | 01/08/00 | 19:15:46 |
| RR4U234 | INP | 15448 | 01/08/00 | 19:16:00 |
| RR4U234 | OUT | 832 | 01/08/00 | 19:16:18 |
| RR4U234 | PTI | 8173 | 01/08/00 | 19:16:18 |
| RR4U234 | RST | 112188 | 01/08/00 | 19:17:02 |
| RR4U234 | VEC | 38112 | 01/08/00 | 19:16:18 |
| RR4U236 | FLG | 712 | 01/08/00 | 19:25:28 |
| RR4U236 | INP | 15448 | 01/08/00 | 19:25:38 |
| RR4U236 | OUT | 832 | 01/08/00 | 19:25:56 |
| RR4U236 | PTI | 8173 | 01/08/00 | 19:25:56 |
| RR4U236 | RST | 112188 | 01/08/00 | 19:26:40 |
| RR4U236 | VEC | 38112 | 01/08/00 | 19:25:56 |
| RR4U238 | FLG | 712 | 01/08/00 | 19:37:06 |
| RR4U238 | INP | 15448 | 01/08/00 | 19:37:16 |
| RR4U238 | OUT | 832 | 01/08/00 | 19:37:40 |
| RR4U238 | PTI | 8173 | 01/08/00 | 19:37:40 |
| RR4U238 | RST | 112188 | 01/08/00 | 19:38:24 |
| RR4U238 | VEC | 38112 | 01/08/00 | 19:37:40 |
| RR5AC227 | FLG | 712 | 01/09/00 | 13:00:38 |
| RR5AC227 | INP | 15448 | 01/09/00 | 13:00:46 |
| RR5AC227 | OUT | 832 | 01/09/00 | 13:01:12 |
| RR5AC227 | PTI | 8173 | 01/09/00 | 13:01:12 |
| RR5AC227 | RST | 112189 | 01/09/00 | 13:01:48 |
| RR5AC227 | VEC | 38112 | 01/09/00 | 13:01:12 |
| RR5AM241 | FLG | 712 | 01/08/00 | 16:18:48 |
| RR5AM241 | INP | 15449 | 01/08/00 | 16:18:56 |
| RR5AM241 | OUT | 888 | 01/08/00 | 16:19:58 |
| RR5AM241 | PTI | 8173 | 01/08/00 | 16:19:58 |
| RR5AM241 | RST | 112189 | 01/08/00 | 16:20:44 |
| RR5AM241 | VEC | 38112 | 01/08/00 | 16:19:58 |
| RR5AM243 | FLG | 712 | 01/08/00 | 16:38:34 |
| RR5AM243 | INP | 15450 | 01/08/00 | 16:38:46 |
| RR5AM243 | OUT | 832 | 01/08/00 | 16:41:16 |
| RR5AM243 | PTI | 8173 | 01/08/00 | 16:41:16 |
| RR5AM243 | RST | 112189 | 01/08/00 | 16:42:02 |
| RR5AM243 | VEC | 38112 | 01/08/00 | 16:41:16 |
| RR5C14 | FLG | 710 | 01/08/00 | 16:57:34 |
| RR5C14 | INP | 15450 | 01/08/00 | 16:57:56 |
| RR5C14 | OUT | 832 | 01/08/00 | 16:58:36 |
| RR5C14 | PTI | 8173 | 01/08/00 | 16:58:36 |
| RR5C14 | RST | 112187 | 01/08/00 | 16:59:22 |
| RR5C14 | VEC | 38112 | 01/08/00 | 16:58:36 |
| RR5I129 | FLG | 712 | 01/08/00 | 17:08:24 |
| RR5I129 | INP | 15447 | 01/08/00 | 17:08:34 |
| RR5I129 | OUT | 832 | 01/08/00 | 17:08:52 |
| RR5I129 | PTI | 8173 | 01/08/00 | 17:08:52 |
| RR5I129 | RST | 112188 | 01/08/00 | 17:09:34 |
| RR5I129 | VEC | 38112 | 01/08/00 | 17:08:52 |
| RR5NP237 | FLG | 712 | 01/08/00 | 17:18:10 |
| RR5NP237 | INP | 15447 | 01/08/00 | 17:18:20 |
| RR5NP237 | OUT | 832 | 01/08/00 | 17:18:40 |
| RR5NP237 | PTI | 8173 | 01/08/00 | 17:18:40 |
| RR5NP237 | RST | 112189 | 01/08/00 | 17:20:14 |
| RR5NP237 | VEC | 38112 | 01/08/00 | 17:18:40 |
| RR5PU238 | FLG | 712 | 01/08/00 | 19:52:12 |
| RR5PU238 | INP | 15449 | 01/08/00 | 19:52:22 |
| RR5PU238 | OUT | 832 | 01/08/00 | 19:52:44 |
| RR5PU238 | PTI | 8173 | 01/08/00 | 19:52:44 |
| RR5PU238 | RST | 112189 | 01/08/00 | 19:53:16 |

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|----------|-----|--------|----------|----------|
| RR5PU238 | VEC | 38112 | 01/08/00 | 19:52:44 |
| RR5PU239 | FLG | 712 | 01/08/00 | 17:59:06 |
| RR5PU239 | INP | 15449 | 01/08/00 | 17:59:14 |
| RR5PU239 | OUT | 832 | 01/08/00 | 17:59:42 |
| RR5PU239 | PTI | 8173 | 01/08/00 | 17:59:42 |
| RR5PU239 | RST | 112189 | 01/08/00 | 18:00:32 |
| RR5PU239 | VEC | 38112 | 01/08/00 | 17:59:42 |
| RR5PU240 | FLG | 712 | 01/08/00 | 20:04:50 |
| RR5PU240 | INP | 15449 | 01/08/00 | 20:05:02 |
| RR5PU240 | OUT | 832 | 01/08/00 | 20:05:42 |
| RR5PU240 | PTI | 8173 | 01/08/00 | 20:05:42 |
| RR5PU240 | RST | 112189 | 01/08/00 | 20:06:18 |
| RR5PU240 | VEC | 38112 | 01/08/00 | 20:05:42 |
| RR5TC99 | FLG | 711 | 01/08/00 | 18:19:26 |
| RR5TC99 | INP | 15447 | 01/08/00 | 18:19:38 |
| RR5TC99 | OUT | 832 | 01/08/00 | 18:19:54 |
| RR5TC99 | PTI | 8173 | 01/08/00 | 18:19:54 |
| RR5TC99 | RST | 112188 | 01/08/00 | 18:20:32 |
| RR5TC99 | VEC | 38112 | 01/08/00 | 18:19:54 |
| RR5TH229 | FLG | 712 | 01/08/00 | 18:34:44 |
| RR5TH229 | INP | 15450 | 01/08/00 | 18:34:54 |
| RR5TH229 | OUT | 832 | 01/08/00 | 18:39:04 |
| RR5TH229 | PTI | 8173 | 01/08/00 | 18:39:04 |
| RR5TH229 | RST | 112189 | 01/08/00 | 18:40:22 |
| RR5TH229 | VEC | 38112 | 01/08/00 | 18:39:04 |
| RR5U232 | FLG | 712 | 01/08/00 | 18:56:24 |
| RR5U232 | INP | 15448 | 01/08/00 | 18:56:32 |
| RR5U232 | OUT | 1000 | 01/08/00 | 18:57:16 |
| RR5U232 | PTI | 8173 | 01/08/00 | 18:57:16 |
| RR5U232 | RST | 112188 | 01/08/00 | 18:57:58 |
| RR5U232 | VEC | 38112 | 01/08/00 | 18:57:16 |
| RR5U233 | FLG | 712 | 01/08/00 | 19:07:00 |
| RR5U233 | INP | 15448 | 01/08/00 | 19:07:10 |
| RR5U233 | OUT | 832 | 01/08/00 | 19:07:38 |
| RR5U233 | PTI | 8173 | 01/08/00 | 19:07:38 |
| RR5U233 | RST | 112188 | 01/08/00 | 19:08:36 |
| RR5U233 | VEC | 38112 | 01/08/00 | 19:07:38 |
| RR5U234 | FLG | 712 | 01/08/00 | 19:17:16 |
| RR5U234 | INP | 15448 | 01/08/00 | 19:17:26 |
| RR5U234 | OUT | 832 | 01/08/00 | 19:17:44 |
| RR5U234 | PTI | 8173 | 01/08/00 | 19:17:44 |
| RR5U234 | RST | 112188 | 01/08/00 | 19:18:30 |
| RR5U234 | VEC | 38112 | 01/08/00 | 19:17:44 |
| RR5U236 | FLG | 712 | 01/08/00 | 19:26:54 |
| RR5U236 | INP | 15448 | 01/08/00 | 19:27:04 |
| RR5U236 | OUT | 832 | 01/08/00 | 19:27:22 |
| RR5U236 | PTI | 8173 | 01/08/00 | 19:27:22 |
| RR5U236 | RST | 112188 | 01/08/00 | 19:28:10 |
| RR5U236 | VEC | 38112 | 01/08/00 | 19:27:22 |
| RR5U238 | FLG | 712 | 01/08/00 | 19:38:40 |
| RR5U238 | INP | 15448 | 01/08/00 | 19:38:50 |
| RR5U238 | OUT | 832 | 01/08/00 | 19:39:18 |
| RR5U238 | PTI | 8173 | 01/08/00 | 19:39:18 |
| RR5U238 | RST | 112188 | 01/08/00 | 19:40:00 |
| RR5U238 | VEC | 38112 | 01/08/00 | 19:39:18 |
| RR6AC227 | FLG | 712 | 01/09/00 | 13:02:12 |
| RR6AC227 | INP | 15448 | 01/09/00 | 13:02:20 |
| RR6AC227 | OUT | 832 | 01/09/00 | 13:02:48 |
| RR6AC227 | PTI | 8173 | 01/09/00 | 13:02:48 |
| RR6AC227 | RST | 112189 | 01/09/00 | 13:03:22 |
| RR6AC227 | VEC | 38112 | 01/09/00 | 13:02:48 |
| RR6AM241 | FLG | 712 | 01/08/00 | 16:21:00 |

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|----------|-----|--------|----------|----------|
| RR6AM241 | INP | 15450 | 01/08/00 | 16:23:04 |
| RR6AM241 | OUT | 888 | 01/08/00 | 16:24:32 |
| RR6AM241 | PTI | 8173 | 01/08/00 | 16:24:32 |
| RR6AM241 | RST | 112189 | 01/08/00 | 16:27:20 |
| RR6AM241 | VEC | 38112 | 01/08/00 | 16:24:32 |
| RR6AM243 | FLG | 712 | 01/08/00 | 16:42:18 |
| RR6AM243 | INP | 15450 | 01/08/00 | 16:42:30 |
| RR6AM243 | OUT | 832 | 01/08/00 | 16:46:18 |
| RR6AM243 | PTI | 8173 | 01/08/00 | 16:46:18 |
| RR6AM243 | RST | 112189 | 01/08/00 | 16:47:08 |
| RR6AM243 | VEC | 38112 | 01/08/00 | 16:46:18 |
| RR6C14 | FLG | 710 | 01/08/00 | 16:59:38 |
| RR6C14 | INP | 15450 | 01/08/00 | 16:59:48 |
| RR6C14 | OUT | 832 | 01/08/00 | 17:00:46 |
| RR6C14 | PTI | 8173 | 01/08/00 | 17:00:46 |
| RR6C14 | RST | 112187 | 01/08/00 | 17:01:32 |
| RR6C14 | VEC | 38112 | 01/08/00 | 17:00:46 |
| RR6I129 | FLG | 712 | 01/08/00 | 17:09:50 |
| RR6I129 | INP | 15447 | 01/08/00 | 17:09:58 |
| RR6I129 | OUT | 832 | 01/08/00 | 17:10:16 |
| RR6I129 | PTI | 8173 | 01/08/00 | 17:10:16 |
| RR6I129 | RST | 112188 | 01/08/00 | 17:11:08 |
| RR6I129 | VEC | 38112 | 01/08/00 | 17:10:16 |
| RR6NP237 | FLG | 712 | 01/08/00 | 17:20:30 |
| RR6NP237 | INP | 15448 | 01/08/00 | 17:20:44 |
| RR6NP237 | OUT | 832 | 01/08/00 | 17:21:06 |
| RR6NP237 | PTI | 8173 | 01/08/00 | 17:21:06 |
| RR6NP237 | RST | 112189 | 01/08/00 | 17:21:48 |
| RR6NP237 | VEC | 38112 | 01/08/00 | 17:21:06 |
| RR6PU238 | FLG | 712 | 01/08/00 | 19:53:34 |
| RR6PU238 | INP | 15449 | 01/08/00 | 19:53:44 |
| RR6PU238 | OUT | 832 | 01/08/00 | 19:54:08 |
| RR6PU238 | PTI | 8173 | 01/08/00 | 19:54:08 |
| RR6PU238 | RST | 112189 | 01/08/00 | 19:54:42 |
| RR6PU238 | VEC | 38112 | 01/08/00 | 19:54:08 |
| RR6PU239 | FLG | 712 | 01/08/00 | 18:00:48 |
| RR6PU239 | INP | 15450 | 01/08/00 | 18:01:00 |
| RR6PU239 | OUT | 832 | 01/08/00 | 18:01:34 |
| RR6PU239 | PTI | 8173 | 01/08/00 | 18:01:34 |
| RR6PU239 | RST | 112189 | 01/08/00 | 18:02:16 |
| RR6PU239 | VEC | 38112 | 01/08/00 | 18:01:34 |
| RR6PU240 | FLG | 712 | 01/08/00 | 20:06:32 |
| RR6PU240 | INP | 15450 | 01/08/00 | 20:06:40 |
| RR6PU240 | OUT | 832 | 01/08/00 | 20:07:32 |
| RR6PU240 | PTI | 8173 | 01/08/00 | 20:07:32 |
| RR6PU240 | RST | 112189 | 01/08/00 | 20:08:02 |
| RR6PU240 | VEC | 38112 | 01/08/00 | 20:07:32 |
| RR6TC99 | FLG | 711 | 01/08/00 | 18:20:46 |
| RR6TC99 | INP | 15447 | 01/08/00 | 18:20:56 |
| RR6TC99 | OUT | 832 | 01/08/00 | 18:21:14 |
| RR6TC99 | PTI | 8173 | 01/08/00 | 18:21:14 |
| RR6TC99 | RST | 112188 | 01/08/00 | 18:21:50 |
| RR6TC99 | VEC | 38112 | 01/08/00 | 18:21:14 |
| RR6TH229 | FLG | 712 | 01/08/00 | 18:40:38 |
| RR6TH229 | INP | 15450 | 01/08/00 | 18:40:48 |
| RR6TH229 | OUT | 832 | 01/08/00 | 18:47:18 |
| RR6TH229 | PTI | 8173 | 01/08/00 | 18:47:18 |
| RR6TH229 | RST | 112189 | 01/08/00 | 18:48:28 |
| RR6TH229 | VEC | 38112 | 01/08/00 | 18:47:18 |
| RR6U232 | FLG | 712 | 01/08/00 | 18:58:12 |
| RR6U232 | INP | 15448 | 01/08/00 | 18:58:20 |
| RR6U232 | OUT | 1000 | 01/08/00 | 18:59:10 |

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|---------|-----|--------|----------|----------|
| RR6U232 | PTI | 8173 | 01/08/00 | 18:59:10 |
| RR6U232 | RST | 112188 | 01/08/00 | 18:59:56 |
| RR6U232 | VEC | 38112 | 01/08/00 | 18:59:10 |
| RR6U233 | FLG | 712 | 01/08/00 | 19:08:56 |
| RR6U233 | INP | 15448 | 01/08/00 | 19:09:06 |
| RR6U233 | OUT | 832 | 01/08/00 | 19:09:38 |
| RR6U233 | PTI | 8173 | 01/08/00 | 19:09:38 |
| RR6U233 | RST | 112188 | 01/08/00 | 19:10:30 |
| RR6U233 | VEC | 38112 | 01/08/00 | 19:09:38 |
| RR6U234 | FLG | 712 | 01/08/00 | 19:18:46 |
| RR6U234 | INP | 15448 | 01/08/00 | 19:18:56 |
| RR6U234 | OUT | 832 | 01/08/00 | 19:19:16 |
| RR6U234 | PTI | 8173 | 01/08/00 | 19:19:16 |
| RR6U234 | RST | 112188 | 01/08/00 | 19:20:08 |
| RR6U234 | VEC | 38112 | 01/08/00 | 19:19:16 |
| RR6U236 | FLG | 712 | 01/08/00 | 19:28:26 |
| RR6U236 | INP | 15448 | 01/08/00 | 19:28:34 |
| RR6U236 | OUT | 832 | 01/08/00 | 19:28:52 |
| RR6U236 | PTI | 8173 | 01/08/00 | 19:28:52 |
| RR6U236 | RST | 112188 | 01/08/00 | 19:29:40 |
| RR6U236 | VEC | 38112 | 01/08/00 | 19:28:52 |
| RR6U238 | FLG | 712 | 01/08/00 | 19:40:16 |
| RR6U238 | INP | 15448 | 01/08/00 | 19:40:26 |
| RR6U238 | OUT | 832 | 01/08/00 | 19:40:54 |
| RR6U238 | PTI | 8173 | 01/08/00 | 19:40:54 |
| RR6U238 | RST | 112188 | 01/08/00 | 19:41:36 |
| RR6U238 | VEC | 38112 | 01/08/00 | 19:40:54 |

..\SC_data\ (input and output files for Bounding Representation analysis)

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|----------|-----|-------|----------|----------|
| SC1AC227 | FLG | 664 | 01/09/00 | 13:35:20 |
| SC1AC227 | INP | 6687 | 01/09/00 | 13:35:28 |
| SC1AC227 | OUT | 15414 | 01/09/00 | 13:35:40 |
| SC1AC227 | PTI | 1311 | 01/09/00 | 13:35:40 |
| SC1AC227 | VEC | 3132 | 01/09/00 | 13:35:40 |
| SC1AM241 | FLG | 664 | 01/09/00 | 13:41:12 |
| SC1AM241 | INP | 6687 | 01/09/00 | 13:41:20 |
| SC1AM241 | OUT | 15470 | 01/09/00 | 13:41:32 |
| SC1AM241 | PTI | 1311 | 01/09/00 | 13:41:32 |
| SC1AM241 | VEC | 3132 | 01/09/00 | 13:41:32 |
| SC1AM243 | FLG | 664 | 01/09/00 | 13:47:34 |
| SC1AM243 | INP | 6687 | 01/09/00 | 13:47:42 |
| SC1AM243 | OUT | 15341 | 01/09/00 | 13:47:54 |
| SC1AM243 | PTI | 1311 | 01/09/00 | 13:47:54 |
| SC1AM243 | VEC | 3132 | 01/09/00 | 13:47:54 |
| SC1C14 | FLG | 662 | 01/09/00 | 13:52:42 |
| SC1C14 | INP | 6687 | 01/09/00 | 13:52:42 |
| SC1C14 | OUT | 13985 | 12/28/99 | 12:11:24 |
| SC1C14 | PTI | 1311 | 12/28/99 | 12:11:24 |
| SC1C14 | VEC | 3132 | 12/28/99 | 12:11:24 |
| SC1I129 | FLG | 664 | 01/09/00 | 13:57:12 |
| SC1I129 | INP | 6687 | 01/09/00 | 13:57:20 |
| SC1I129 | OUT | 13985 | 01/09/00 | 13:57:32 |
| SC1I129 | PTI | 1311 | 01/09/00 | 13:57:32 |
| SC1I129 | VEC | 3132 | 01/09/00 | 13:57:32 |
| SC1NP237 | FLG | 664 | 01/09/00 | 14:02:32 |
| SC1NP237 | INP | 6687 | 01/09/00 | 14:02:44 |
| SC1NP237 | OUT | 15268 | 01/09/00 | 14:02:56 |
| SC1NP237 | PTI | 1311 | 01/09/00 | 14:02:56 |
| SC1NP237 | VEC | 3132 | 01/09/00 | 14:02:56 |
| SC1PU238 | FLG | 664 | 01/09/00 | 14:08:04 |
| SC1PU238 | INP | 6687 | 01/09/00 | 14:08:12 |
| SC1PU238 | OUT | 15268 | 01/09/00 | 14:08:24 |
| SC1PU238 | PTI | 1311 | 01/09/00 | 14:08:24 |
| SC1PU238 | VEC | 3132 | 01/09/00 | 14:08:24 |
| SC1PU239 | FLG | 664 | 01/09/00 | 14:17:54 |
| SC1PU239 | INP | 6687 | 01/09/00 | 14:17:54 |
| SC1PU239 | OUT | 14043 | 01/09/00 | 14:15:56 |
| SC1PU239 | PTI | 1311 | 01/09/00 | 14:15:56 |
| SC1PU239 | VEC | 3132 | 01/09/00 | 14:15:56 |
| SC1PU240 | FLG | 664 | 01/09/00 | 14:21:58 |
| SC1PU240 | INP | 6687 | 01/09/00 | 14:21:58 |
| SC1PU240 | OUT | 15268 | 01/09/00 | 14:21:06 |
| SC1PU240 | PTI | 1311 | 01/09/00 | 14:21:06 |
| SC1PU240 | VEC | 3132 | 01/09/00 | 14:21:06 |
| SC1TC99 | FLG | 663 | 01/09/00 | 14:27:06 |
| SC1TC99 | INP | 6687 | 01/09/00 | 14:27:16 |
| SC1TC99 | OUT | 14043 | 01/09/00 | 14:27:28 |
| SC1TC99 | PTI | 1311 | 01/09/00 | 14:27:28 |
| SC1TC99 | VEC | 3132 | 01/09/00 | 14:27:28 |
| SC1TH229 | FLG | 664 | 01/09/00 | 14:32:20 |
| SC1TH229 | INP | 6687 | 01/09/00 | 14:32:28 |
| SC1TH229 | OUT | 15341 | 01/09/00 | 14:32:40 |
| SC1TH229 | PTI | 1311 | 01/09/00 | 14:32:40 |
| SC1TH229 | VEC | 3132 | 01/09/00 | 14:32:40 |
| SC1U232 | FLG | 664 | 01/09/00 | 14:37:40 |
| SC1U232 | INP | 6687 | 01/09/00 | 14:37:54 |
| SC1U232 | OUT | 15874 | 01/09/00 | 14:38:14 |
| SC1U232 | PTI | 1311 | 01/09/00 | 14:38:14 |

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|----------|-----|-------|----------|----------|
| SC1U232 | VEC | 3132 | 01/09/00 | 14:38:14 |
| SC1U233 | FLG | 664 | 01/09/00 | 14:44:20 |
| SC1U233 | INP | 6687 | 01/09/00 | 14:44:28 |
| SC1U233 | OUT | 15414 | 01/09/00 | 14:44:40 |
| SC1U233 | PTI | 1311 | 01/09/00 | 14:44:40 |
| SC1U233 | VEC | 3132 | 01/09/00 | 14:44:40 |
| SC1U234 | FLG | 664 | 01/09/00 | 14:50:44 |
| SC1U234 | INP | 6687 | 01/09/00 | 14:50:54 |
| SC1U234 | OUT | 14043 | 01/09/00 | 14:51:06 |
| SC1U234 | PTI | 1311 | 01/09/00 | 14:51:06 |
| SC1U234 | VEC | 3132 | 01/09/00 | 14:51:06 |
| SC1U236 | FLG | 664 | 01/09/00 | 14:56:48 |
| SC1U236 | INP | 6687 | 01/09/00 | 14:56:56 |
| SC1U236 | OUT | 14043 | 01/09/00 | 14:57:08 |
| SC1U236 | PTI | 1311 | 01/09/00 | 14:57:06 |
| SC1U236 | VEC | 3132 | 01/09/00 | 14:57:08 |
| SC1U238 | FLG | 664 | 01/09/00 | 15:02:28 |
| SC1U238 | INP | 6687 | 01/09/00 | 15:02:38 |
| SC1U238 | OUT | 15341 | 01/09/00 | 15:02:50 |
| SC1U238 | PTI | 1311 | 01/09/00 | 15:02:50 |
| SC1U238 | VEC | 3132 | 01/09/00 | 15:02:50 |
| SC2AC227 | FLG | 664 | 01/09/00 | 13:36:34 |
| SC2AC227 | INP | 6687 | 01/09/00 | 13:36:42 |
| SC2AC227 | OUT | 15498 | 01/09/00 | 13:36:52 |
| SC2AC227 | PTI | 1311 | 01/09/00 | 13:36:52 |
| SC2AC227 | VEC | 3132 | 01/09/00 | 13:36:52 |
| SC2AM241 | FLG | 664 | 01/09/00 | 13:42:08 |
| SC2AM241 | INP | 6689 | 01/09/00 | 13:42:18 |
| SC2AM241 | OUT | 15554 | 01/09/00 | 13:42:30 |
| SC2AM241 | PTI | 1311 | 01/09/00 | 13:42:30 |
| SC2AM241 | VEC | 3132 | 01/09/00 | 13:42:30 |
| SC2AM243 | FLG | 664 | 01/09/00 | 13:48:30 |
| SC2AM243 | INP | 6690 | 01/09/00 | 13:48:38 |
| SC2AM243 | OUT | 15425 | 01/09/00 | 13:48:52 |
| SC2AM243 | PTI | 1311 | 01/09/00 | 13:48:52 |
| SC2AM243 | VEC | 3132 | 01/09/00 | 13:48:52 |
| SC2C14 | FLG | 662 | 01/09/00 | 13:53:18 |
| SC2C14 | INP | 6690 | 01/09/00 | 13:53:28 |
| SC2C14 | OUT | 14069 | 01/09/00 | 13:53:38 |
| SC2C14 | PTI | 1311 | 01/09/00 | 13:53:38 |
| SC2C14 | VEC | 3132 | 01/09/00 | 13:53:38 |
| SC2I129 | FLG | 664 | 01/09/00 | 13:58:10 |
| SC2I129 | INP | 6688 | 01/09/00 | 13:58:18 |
| SC2I129 | OUT | 14069 | 01/09/00 | 13:58:30 |
| SC2I129 | PTI | 1311 | 01/09/00 | 13:58:30 |
| SC2I129 | VEC | 3132 | 01/09/00 | 13:58:30 |
| SC2NP237 | FLG | 664 | 01/09/00 | 14:03:30 |
| SC2NP237 | INP | 6689 | 01/09/00 | 14:03:40 |
| SC2NP237 | OUT | 15352 | 01/09/00 | 14:03:52 |
| SC2NP237 | PTI | 1311 | 01/09/00 | 14:03:52 |
| SC2NP237 | VEC | 3132 | 01/09/00 | 14:03:52 |
| SC2PU238 | FLG | 664 | 01/09/00 | 14:09:18 |
| SC2PU238 | INP | 6688 | 01/09/00 | 14:09:30 |
| SC2PU238 | OUT | 15352 | 01/09/00 | 14:09:42 |
| SC2PU238 | PTI | 1311 | 01/09/00 | 14:09:42 |
| SC2PU238 | VEC | 3132 | 01/09/00 | 14:09:42 |
| SC2PU239 | FLG | 664 | 01/09/00 | 14:18:24 |
| SC2PU239 | INP | 6690 | 01/09/00 | 14:18:24 |
| SC2PU239 | OUT | 14127 | 01/09/00 | 14:17:02 |
| SC2PU239 | PTI | 1311 | 01/09/00 | 14:17:02 |
| SC2PU239 | VEC | 3132 | 01/09/00 | 14:17:02 |
| SC2PU240 | FLG | 664 | 01/09/00 | 14:22:28 |

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|----------|-----|-------|----------|----------|
| SC2PU240 | INP | 6690 | 01/09/00 | 14:22:38 |
| SC2PU240 | OUT | 15352 | 01/09/00 | 14:22:50 |
| SC2PU240 | PTI | 1311 | 01/09/00 | 14:22:50 |
| SC2PU240 | VEC | 3132 | 01/09/00 | 14:22:50 |
| SC2TC99 | FLG | 663 | 01/09/00 | 14:28:04 |
| SC2TC99 | INP | 6687 | 01/09/00 | 14:28:14 |
| SC2TC99 | OUT | 14127 | 01/09/00 | 14:28:26 |
| SC2TC99 | PTI | 1311 | 01/09/00 | 14:28:26 |
| SC2TC99 | VEC | 3132 | 01/09/00 | 14:28:26 |
| SC2TH229 | FLG | 664 | 01/09/00 | 14:33:10 |
| SC2TH229 | INP | 6690 | 01/09/00 | 14:33:20 |
| SC2TH229 | OUT | 15425 | 01/09/00 | 14:33:32 |
| SC2TH229 | PTI | 1311 | 01/09/00 | 14:33:32 |
| SC2TH229 | VEC | 3132 | 01/09/00 | 14:33:32 |
| SC2U232 | FLG | 664 | 01/09/00 | 14:39:00 |
| SC2U232 | INP | 6688 | 01/09/00 | 14:39:16 |
| SC2U232 | OUT | 15958 | 01/09/00 | 14:39:28 |
| SC2U232 | PTI | 1311 | 01/09/00 | 14:39:28 |
| SC2U232 | VEC | 3132 | 01/09/00 | 14:39:28 |
| SC2U233 | FLG | 664 | 01/09/00 | 14:45:26 |
| SC2U233 | INP | 6689 | 01/09/00 | 14:45:34 |
| SC2U233 | OUT | 15498 | 01/09/00 | 14:45:50 |
| SC2U233 | PTI | 1311 | 01/09/00 | 14:45:50 |
| SC2U233 | VEC | 3132 | 01/09/00 | 14:45:50 |
| SC2U234 | FLG | 664 | 01/09/00 | 14:51:46 |
| SC2U234 | INP | 6689 | 01/09/00 | 14:51:56 |
| SC2U234 | OUT | 14127 | 01/09/00 | 14:52:06 |
| SC2U234 | PTI | 1311 | 01/09/00 | 14:52:06 |
| SC2U234 | VEC | 3132 | 01/09/00 | 14:52:06 |
| SC2U236 | FLG | 664 | 01/09/00 | 14:57:44 |
| SC2U236 | INP | 6689 | 01/09/00 | 14:57:54 |
| SC2U236 | OUT | 14127 | 01/09/00 | 14:58:06 |
| SC2U236 | PTI | 1311 | 01/09/00 | 14:58:06 |
| SC2U236 | VEC | 3132 | 01/09/00 | 14:58:06 |
| SC2U238 | FLG | 664 | 01/09/00 | 15:03:40 |
| SC2U238 | INP | 6689 | 01/09/00 | 15:03:50 |
| SC2U238 | OUT | 15425 | 01/09/00 | 15:04:02 |
| SC2U238 | PTI | 1311 | 01/09/00 | 15:04:02 |
| SC2U238 | VEC | 3132 | 01/09/00 | 15:04:02 |
| SC3AC227 | FLG | 664 | 01/09/00 | 13:37:26 |
| SC3AC227 | INP | 6688 | 01/09/00 | 13:37:34 |
| SC3AC227 | OUT | 15498 | 01/09/00 | 13:37:46 |
| SC3AC227 | PTI | 1311 | 01/09/00 | 13:37:46 |
| SC3AC227 | VEC | 3132 | 01/09/00 | 13:37:46 |
| SC3AM241 | FLG | 664 | 01/09/00 | 13:43:12 |
| SC3AM241 | INP | 6689 | 01/09/00 | 13:43:18 |
| SC3AM241 | OUT | 15554 | 01/09/00 | 13:43:30 |
| SC3AM241 | PTI | 1311 | 01/09/00 | 13:43:30 |
| SC3AM241 | VEC | 3132 | 01/09/00 | 13:43:30 |
| SC3AM243 | FLG | 664 | 01/09/00 | 13:49:22 |
| SC3AM243 | INP | 6690 | 01/09/00 | 13:49:30 |
| SC3AM243 | OUT | 15425 | 01/09/00 | 13:49:42 |
| SC3AM243 | PTI | 1311 | 01/09/00 | 13:49:42 |
| SC3AM243 | VEC | 3132 | 01/09/00 | 13:49:42 |
| SC3C14 | FLG | 662 | 01/09/00 | 13:54:24 |
| SC3C14 | INP | 6690 | 01/09/00 | 13:54:32 |
| SC3C14 | OUT | 14069 | 01/09/00 | 13:54:42 |
| SC3C14 | PTI | 1311 | 01/09/00 | 13:54:42 |
| SC3C14 | VEC | 3132 | 01/09/00 | 13:54:42 |
| SC3I129 | FLG | 664 | 01/09/00 | 13:59:04 |
| SC3I129 | INP | 6688 | 01/09/00 | 13:59:14 |
| SC3I129 | OUT | 14069 | 01/09/00 | 13:59:24 |

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|----------|-----|-------|----------|----------|
| SC3I129 | PTI | 1311 | 01/09/00 | 13:59:24 |
| SC3I129 | VEC | 3132 | 01/09/00 | 13:59:24 |
| SC3NP237 | FLG | 664 | 01/09/00 | 14:04:26 |
| SC3NP237 | INP | 6689 | 01/09/00 | 14:04:38 |
| SC3NP237 | OUT | 15352 | 01/09/00 | 14:04:50 |
| SC3NP237 | PTI | 1311 | 01/09/00 | 14:04:50 |
| SC3NP237 | VEC | 3132 | 01/09/00 | 14:04:50 |
| SC3PU238 | FLG | 664 | 01/09/00 | 14:10:24 |
| SC3PU238 | INP | 6688 | 01/09/00 | 14:10:32 |
| SC3PU238 | OUT | 15352 | 01/09/00 | 14:10:44 |
| SC3PU238 | PTI | 1311 | 01/09/00 | 14:10:44 |
| SC3PU238 | VEC | 3132 | 01/09/00 | 14:10:44 |
| SC3PU239 | FLG | 664 | 01/09/00 | 14:19:02 |
| SC3PU239 | INP | 6691 | 01/09/00 | 14:19:10 |
| SC3PU239 | OUT | 14127 | 01/09/00 | 14:19:26 |
| SC3PU239 | PTI | 1311 | 01/09/00 | 14:19:26 |
| SC3PU239 | VEC | 3132 | 01/09/00 | 14:19:26 |
| SC3PU240 | FLG | 664 | 01/09/00 | 14:23:36 |
| SC3PU240 | INP | 6690 | 01/09/00 | 14:23:46 |
| SC3PU240 | OUT | 15352 | 01/09/00 | 14:23:58 |
| SC3PU240 | PTI | 1311 | 01/09/00 | 14:23:58 |
| SC3PU240 | VEC | 3132 | 01/09/00 | 14:23:58 |
| SC3TC99 | FLG | 663 | 01/09/00 | 14:28:58 |
| SC3TC99 | INP | 6688 | 01/09/00 | 14:29:08 |
| SC3TC99 | OUT | 14127 | 01/09/00 | 14:29:18 |
| SC3TC99 | PTI | 1311 | 01/09/00 | 14:29:18 |
| SC3TC99 | VEC | 3132 | 01/09/00 | 14:29:18 |
| SC3TH229 | FLG | 664 | 01/09/00 | 14:34:18 |
| SC3TH229 | INP | 6690 | 01/09/00 | 14:34:30 |
| SC3TH229 | OUT | 15425 | 01/09/00 | 14:34:42 |
| SC3TH229 | PTI | 1311 | 01/09/00 | 14:34:42 |
| SC3TH229 | VEC | 3132 | 01/09/00 | 14:34:42 |
| SC3U232 | FLG | 664 | 01/09/00 | 14:40:08 |
| SC3U232 | INP | 6688 | 01/09/00 | 14:40:18 |
| SC3U232 | OUT | 15958 | 01/09/00 | 14:40:30 |
| SC3U232 | PTI | 1311 | 01/09/00 | 14:40:30 |
| SC3U232 | VEC | 3132 | 01/09/00 | 14:40:30 |
| SC3U233 | FLG | 664 | 01/09/00 | 14:46:34 |
| SC3U233 | INP | 6690 | 01/09/00 | 14:46:44 |
| SC3U233 | OUT | 15498 | 01/09/00 | 14:46:58 |
| SC3U233 | PTI | 1311 | 01/09/00 | 14:46:58 |
| SC3U233 | VEC | 3132 | 01/09/00 | 14:46:58 |
| SC3U234 | FLG | 664 | 01/09/00 | 14:52:56 |
| SC3U234 | INP | 6690 | 01/09/00 | 14:53:04 |
| SC3U234 | OUT | 14127 | 01/09/00 | 14:53:16 |
| SC3U234 | PTI | 1311 | 01/09/00 | 14:53:16 |
| SC3U234 | VEC | 3132 | 01/09/00 | 14:53:16 |
| SC3U236 | FLG | 664 | 01/09/00 | 14:58:46 |
| SC3U236 | INP | 6690 | 01/09/00 | 14:58:58 |
| SC3U236 | OUT | 14127 | 01/09/00 | 14:59:10 |
| SC3U236 | PTI | 1311 | 01/09/00 | 14:59:10 |
| SC3U236 | VEC | 3132 | 01/09/00 | 14:59:10 |
| SC3U238 | FLG | 664 | 01/09/00 | 15:04:38 |
| SC3U238 | INP | 6690 | 01/09/00 | 15:04:48 |
| SC3U238 | OUT | 15425 | 01/09/00 | 15:04:58 |
| SC3U238 | PTI | 1311 | 01/09/00 | 15:04:58 |
| SC3U238 | VEC | 3132 | 01/09/00 | 15:04:58 |
| SC4AC227 | FLG | 664 | 01/09/00 | 13:38:28 |
| SC4AC227 | INP | 6688 | 01/09/00 | 13:38:36 |
| SC4AC227 | OUT | 15498 | 01/09/00 | 13:38:46 |
| SC4AC227 | PTI | 1311 | 01/09/00 | 13:38:46 |
| SC4AC227 | VEC | 3132 | 01/09/00 | 13:38:46 |

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|----------|-----|-------|----------|----------|
| SC4AM241 | FLG | 664 | 01/09/00 | 13:44:24 |
| SC4AM241 | INP | 6689 | 01/09/00 | 13:44:32 |
| SC4AM241 | OUT | 15554 | 01/09/00 | 13:44:44 |
| SC4AM241 | PTI | 1311 | 01/09/00 | 13:44:44 |
| SC4AM241 | VEC | 3132 | 01/09/00 | 13:44:44 |
| SC4AM243 | FLG | 664 | 01/09/00 | 13:50:26 |
| SC4AM243 | INP | 6690 | 01/09/00 | 13:50:32 |
| SC4AM243 | OUT | 15425 | 01/09/00 | 13:50:46 |
| SC4AM243 | PTI | 1311 | 01/09/00 | 13:50:46 |
| SC4AM243 | VEC | 3132 | 01/09/00 | 13:50:46 |
| SC4C14 | FLG | 662 | 01/09/00 | 13:55:20 |
| SC4C14 | INP | 6690 | 01/09/00 | 13:55:34 |
| SC4C14 | OUT | 14069 | 01/09/00 | 13:55:50 |
| SC4C14 | PTI | 1311 | 01/09/00 | 13:55:50 |
| SC4C14 | VEC | 3132 | 01/09/00 | 13:55:50 |
| SC4I129 | FLG | 664 | 01/09/00 | 13:59:58 |
| SC4I129 | INP | 6688 | 01/09/00 | 14:00:10 |
| SC4I129 | OUT | 14069 | 01/09/00 | 14:00:20 |
| SC4I129 | PTI | 1311 | 01/09/00 | 14:00:20 |
| SC4I129 | VEC | 3132 | 01/09/00 | 14:00:20 |
| SC4NP237 | FLG | 664 | 01/09/00 | 14:05:24 |
| SC4NP237 | INP | 6689 | 01/09/00 | 14:05:34 |
| SC4NP237 | OUT | 15352 | 01/09/00 | 14:05:46 |
| SC4NP237 | PTI | 1311 | 01/09/00 | 14:05:46 |
| SC4NP237 | VEC | 3132 | 01/09/00 | 14:05:46 |
| SC4PU238 | FLG | 664 | 01/09/00 | 14:11:34 |
| SC4PU238 | INP | 6688 | 01/09/00 | 14:11:44 |
| SC4PU238 | OUT | 15352 | 01/09/00 | 14:11:54 |
| SC4PU238 | PTI | 1311 | 01/09/00 | 14:11:54 |
| SC4PU238 | VEC | 3132 | 01/09/00 | 14:11:54 |
| SC4PU240 | FLG | 664 | 01/09/00 | 14:25:12 |
| SC4PU240 | INP | 6690 | 01/09/00 | 14:25:18 |
| SC4PU240 | OUT | 15352 | 01/09/00 | 14:25:32 |
| SC4PU240 | PTI | 1311 | 01/09/00 | 14:25:32 |
| SC4PU240 | VEC | 3132 | 01/09/00 | 14:25:32 |
| SC4TC99 | FLG | 663 | 01/09/00 | 14:29:50 |
| SC4TC99 | INP | 6688 | 01/09/00 | 14:30:04 |
| SC4TC99 | OUT | 14127 | 01/09/00 | 14:30:16 |
| SC4TC99 | PTI | 1311 | 01/09/00 | 14:30:16 |
| SC4TC99 | VEC | 3132 | 01/09/00 | 14:30:16 |
| SC4TH229 | FLG | 664 | 01/09/00 | 14:35:22 |
| SC4TH229 | INP | 6690 | 01/09/00 | 14:35:40 |
| SC4TH229 | OUT | 15425 | 01/09/00 | 14:35:56 |
| SC4TH229 | PTI | 1311 | 01/09/00 | 14:35:56 |
| SC4TH229 | VEC | 3132 | 01/09/00 | 14:35:56 |
| SC4U232 | FLG | 664 | 01/09/00 | 14:41:04 |
| SC4U232 | INP | 6688 | 01/09/00 | 14:41:16 |
| SC4U232 | OUT | 15958 | 01/09/00 | 14:41:32 |
| SC4U232 | PTI | 1311 | 01/09/00 | 14:41:32 |
| SC4U232 | VEC | 3132 | 01/09/00 | 14:41:32 |
| SC4U233 | FLG | 664 | 01/09/00 | 14:47:36 |
| SC4U233 | INP | 6690 | 01/09/00 | 14:47:46 |
| SC4U233 | OUT | 15498 | 01/09/00 | 14:47:58 |
| SC4U233 | PTI | 1311 | 01/09/00 | 14:47:58 |
| SC4U233 | VEC | 3132 | 01/09/00 | 14:47:58 |
| SC4U234 | FLG | 664 | 01/09/00 | 14:53:58 |
| SC4U234 | INP | 6690 | 01/09/00 | 14:54:08 |
| SC4U234 | OUT | 14127 | 01/09/00 | 14:54:18 |
| SC4U234 | PTI | 1311 | 01/09/00 | 14:54:18 |
| SC4U234 | VEC | 3132 | 01/09/00 | 14:54:18 |
| SC4U236 | FLG | 664 | 01/09/00 | 14:59:42 |
| SC4U236 | INP | 6690 | 01/09/00 | 14:59:52 |

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|----------|-----|-------|----------|----------|
| SC4U236 | OUT | 14127 | 01/09/00 | 15:00:02 |
| SC4U236 | PTI | 1311 | 01/09/00 | 15:00:02 |
| SC4U236 | VEC | 3132 | 01/09/00 | 15:00:02 |
| SC4U238 | FLG | 664 | 01/09/00 | 15:05:34 |
| SC4U238 | INP | 6690 | 01/09/00 | 15:05:44 |
| SC4U238 | OUT | 15425 | 01/09/00 | 15:05:56 |
| SC4U238 | PTI | 1311 | 01/09/00 | 15:05:56 |
| SC4U238 | VEC | 3132 | 01/09/00 | 15:05:56 |
| SC5AC227 | FLG | 664 | 01/09/00 | 13:39:14 |
| SC5AC227 | INP | 6688 | 01/09/00 | 13:39:22 |
| SC5AC227 | OUT | 15498 | 01/09/00 | 13:39:32 |
| SC5AC227 | PTI | 1311 | 01/09/00 | 13:39:32 |
| SC5AC227 | VEC | 3132 | 01/09/00 | 13:39:32 |
| SC5AM241 | FLG | 664 | 01/09/00 | 13:45:16 |
| SC5AM241 | INP | 6689 | 01/09/00 | 13:45:26 |
| SC5AM241 | OUT | 15554 | 01/09/00 | 13:45:36 |
| SC5AM241 | PTI | 1311 | 01/09/00 | 13:45:36 |
| SC5AM241 | VEC | 3132 | 01/09/00 | 13:45:36 |
| SC5AM243 | FLG | 664 | 01/09/00 | 13:51:34 |
| SC5AM243 | INP | 6691 | 01/09/00 | 13:51:46 |
| SC5AM243 | OUT | 15425 | 01/09/00 | 13:52:02 |
| SC5AM243 | PTI | 1311 | 01/09/00 | 13:52:02 |
| SC5AM243 | VEC | 3132 | 01/09/00 | 13:52:02 |
| SC5C14 | FLG | 662 | 01/09/00 | 13:56:20 |
| SC5C14 | INP | 6690 | 01/09/00 | 13:56:30 |
| SC5C14 | OUT | 14069 | 01/09/00 | 13:56:42 |
| SC5C14 | PTI | 1311 | 01/09/00 | 13:56:42 |
| SC5C14 | VEC | 3132 | 01/09/00 | 13:56:42 |
| SC5I129 | FLG | 664 | 01/09/00 | 14:00:50 |
| SC5I129 | INP | 6689 | 01/09/00 | 14:00:56 |
| SC5I129 | OUT | 14069 | 01/09/00 | 14:01:08 |
| SC5I129 | PTI | 1311 | 01/09/00 | 14:01:08 |
| SC5I129 | VEC | 3132 | 01/09/00 | 14:01:08 |
| SC5NP237 | FLG | 664 | 01/09/00 | 14:06:26 |
| SC5NP237 | INP | 6689 | 01/09/00 | 14:06:32 |
| SC5NP237 | OUT | 15352 | 01/09/00 | 14:06:44 |
| SC5NP237 | PTI | 1311 | 01/09/00 | 14:06:44 |
| SC5NP237 | VEC | 3132 | 01/09/00 | 14:06:44 |
| SC5PU238 | FLG | 664 | 01/09/00 | 14:12:34 |
| SC5PU238 | INP | 6689 | 01/09/00 | 14:12:42 |
| SC5PU238 | OUT | 15352 | 01/09/00 | 14:12:54 |
| SC5PU238 | PTI | 1311 | 01/09/00 | 14:12:54 |
| SC5PU238 | VEC | 3132 | 01/09/00 | 14:12:54 |
| SC5PU240 | FLG | 664 | 01/09/00 | 14:26:06 |
| SC5PU240 | INP | 6691 | 01/09/00 | 14:26:14 |
| SC5PU240 | OUT | 15352 | 01/09/00 | 14:26:28 |
| SC5PU240 | PTI | 1311 | 01/09/00 | 14:26:28 |
| SC5PU240 | VEC | 3132 | 01/09/00 | 14:26:28 |
| SC5TC99 | FLG | 663 | 01/09/00 | 14:30:42 |
| SC5TC99 | INP | 6688 | 01/09/00 | 14:30:52 |
| SC5TC99 | OUT | 14127 | 01/09/00 | 14:31:02 |
| SC5TC99 | PTI | 1311 | 01/09/00 | 14:31:02 |
| SC5TC99 | VEC | 3132 | 01/09/00 | 14:31:02 |
| SC5TH229 | FLG | 664 | 01/09/00 | 14:36:32 |
| SC5TH229 | INP | 6691 | 01/09/00 | 14:36:44 |
| SC5TH229 | OUT | 15425 | 01/09/00 | 14:37:00 |
| SC5TH229 | PTI | 1311 | 01/09/00 | 14:37:00 |
| SC5TH229 | VEC | 3132 | 01/09/00 | 14:37:00 |
| SC5U232 | FLG | 664 | 01/09/00 | 14:42:06 |
| SC5U232 | INP | 6689 | 01/09/00 | 14:42:18 |
| SC5U232 | OUT | 15958 | 01/09/00 | 14:42:32 |
| SC5U232 | PTI | 1311 | 01/09/00 | 14:42:32 |

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|----------|-----|-------|----------|----------|
| SC5U232 | VEC | 3132 | 01/09/00 | 14:42:32 |
| SC5U233 | FLG | 664 | 01/09/00 | 14:48:34 |
| SC5U233 | INP | 6690 | 01/09/00 | 14:48:44 |
| SC5U233 | OUT | 15498 | 01/09/00 | 14:48:56 |
| SC5U233 | PTI | 1311 | 01/09/00 | 14:48:56 |
| SC5U233 | VEC | 3132 | 01/09/00 | 14:48:56 |
| SC5U234 | FLG | 664 | 01/09/00 | 14:54:56 |
| SC5U234 | INP | 6690 | 01/09/00 | 14:55:04 |
| SC5U234 | OUT | 14127 | 01/09/00 | 14:55:16 |
| SC5U234 | PTI | 1311 | 01/09/00 | 14:55:16 |
| SC5U234 | VEC | 3132 | 01/09/00 | 14:55:16 |
| SC5U236 | FLG | 664 | 01/09/00 | 15:00:36 |
| SC5U236 | INP | 6690 | 01/09/00 | 15:00:46 |
| SC5U236 | OUT | 14127 | 01/09/00 | 15:00:58 |
| SC5U236 | PTI | 1311 | 01/09/00 | 15:00:58 |
| SC5U236 | VEC | 3132 | 01/09/00 | 15:00:58 |
| SC5U238 | FLG | 664 | 01/09/00 | 15:06:30 |
| SC5U238 | INP | 6690 | 01/09/00 | 15:06:40 |
| SC5U238 | OUT | 15425 | 01/09/00 | 15:06:52 |
| SC5U238 | PTI | 1311 | 01/09/00 | 15:06:52 |
| SC5U238 | VEC | 3132 | 01/09/00 | 15:06:52 |
| SC6AC227 | FLG | 664 | 01/09/00 | 13:40:04 |
| SC6AC227 | INP | 6688 | 01/09/00 | 13:40:14 |
| SC6AC227 | OUT | 15498 | 01/09/00 | 13:40:26 |
| SC6AC227 | PTI | 1311 | 01/09/00 | 13:40:26 |
| SC6AC227 | VEC | 3132 | 01/09/00 | 13:40:26 |
| SC6AM241 | FLG | 664 | 01/09/00 | 13:46:06 |
| SC6AM241 | INP | 6690 | 01/09/00 | 13:46:36 |
| SC6AM241 | OUT | 15554 | 01/09/00 | 13:46:48 |
| SC6AM241 | PTI | 1311 | 01/09/00 | 13:46:48 |
| SC6AM241 | VEC | 3132 | 01/09/00 | 13:46:48 |
| SC6I129 | FLG | 664 | 01/09/00 | 14:01:44 |
| SC6I129 | INP | 6689 | 01/09/00 | 14:01:50 |
| SC6I129 | OUT | 14069 | 01/09/00 | 14:02:02 |
| SC6I129 | PTI | 1311 | 01/09/00 | 14:02:02 |
| SC6I129 | VEC | 3132 | 01/09/00 | 14:02:02 |
| SC6NP237 | FLG | 664 | 01/09/00 | 14:07:12 |
| SC6NP237 | INP | 6690 | 01/09/00 | 14:07:18 |
| SC6NP237 | OUT | 15352 | 01/09/00 | 14:07:30 |
| SC6NP237 | PTI | 1311 | 01/09/00 | 14:07:30 |
| SC6NP237 | VEC | 3132 | 01/09/00 | 14:07:30 |
| SC6PU238 | FLG | 664 | 01/09/00 | 14:13:42 |
| SC6PU238 | INP | 6689 | 01/09/00 | 14:14:30 |
| SC6PU238 | OUT | 15352 | 01/09/00 | 14:14:42 |
| SC6PU238 | PTI | 1311 | 01/09/00 | 14:14:42 |
| SC6PU238 | VEC | 3132 | 01/09/00 | 14:14:42 |
| SC6TC99 | FLG | 663 | 01/09/00 | 14:31:30 |
| SC6TC99 | INP | 6688 | 01/09/00 | 14:31:42 |
| SC6TC99 | OUT | 14127 | 01/09/00 | 14:31:54 |
| SC6TC99 | PTI | 1311 | 01/09/00 | 14:31:54 |
| SC6TC99 | VEC | 3132 | 01/09/00 | 14:31:54 |
| SC6U232 | FLG | 664 | 01/09/00 | 14:43:14 |
| SC6U232 | INP | 6689 | 01/09/00 | 14:43:20 |
| SC6U232 | OUT | 15958 | 01/09/00 | 14:43:34 |
| SC6U232 | PTI | 1311 | 01/09/00 | 14:43:34 |
| SC6U232 | VEC | 3132 | 01/09/00 | 14:43:34 |
| SC6U233 | FLG | 664 | 01/09/00 | 14:49:36 |
| SC6U233 | INP | 6690 | 01/09/00 | 14:49:44 |
| SC6U233 | OUT | 15498 | 01/09/00 | 14:50:02 |
| SC6U233 | PTI | 1311 | 01/09/00 | 14:50:02 |
| SC6U233 | VEC | 3132 | 01/09/00 | 14:50:02 |
| SC6U234 | FLG | 664 | 01/09/00 | 14:55:48 |

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|---------|-----|-------|----------|----------|
| SC6U234 | INP | 6690 | 01/09/00 | 14:55:58 |
| SC6U234 | OUT | 14127 | 01/09/00 | 14:56:10 |
| SC6U234 | PTI | 1311 | 01/09/00 | 14:56:10 |
| SC6U234 | VEC | 3132 | 01/09/00 | 14:56:10 |
| SC6U236 | FLG | 664 | 01/09/00 | 15:01:32 |
| SC6U236 | INP | 6690 | 01/09/00 | 15:01:40 |
| SC6U236 | OUT | 14127 | 01/09/00 | 15:01:52 |
| SC6U236 | PTI | 1311 | 01/09/00 | 15:01:52 |
| SC6U236 | VEC | 3132 | 01/09/00 | 15:01:52 |
| SC6U238 | FLG | 664 | 01/09/00 | 15:07:38 |
| SC6U238 | INP | 6690 | 01/09/00 | 15:07:48 |
| SC6U238 | OUT | 15425 | 01/09/00 | 15:08:02 |
| SC6U238 | PTI | 1311 | 01/09/00 | 15:08:02 |
| SC6U238 | VEC | 3132 | 01/09/00 | 15:08:02 |