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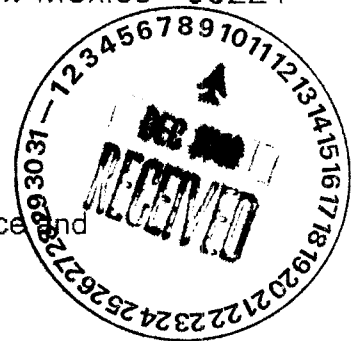
Department of Energy

memorandumCarlsbad Field Office
Carlsbad, New Mexico 88221

DATE: 9 DEC 2003

REPLY TO
ATTN OF: CBFO:NTP:KWW:VW:03-3520:UFC:5822SUBJECT: Annual Re-Evaluation of Hanford Site TRU Waste Program Compliance and
Expansion to Include New Nondestructive Assay Systems

TO: Keith Klein, Manager, DOE-RL



The Carlsbad Field Office (CBFO) completed its annual evaluation of the Hanford Site's transuranic (TRU) waste program during audit A-03-14 that took place June 16-20, 2003. During this audit, the CBFO also evaluated two new imaging passive-active neutron (IPAN) systems to be used to characterize contact-handled (CH) TRU debris (S5000) at the Waste Receiving and Processing Plant (WRAP) facility and seven ANTECH calorimeters to be used in combination with a segmented gamma scan assay system (SGSAS) for characterizing both debris (S5000) and homogeneous solids (S3000) at the Plutonium Finishing Plant (PFP). In addition, a surveillance was conducted September 8-11, 2003 to evaluate hydrogen and methane analysis at Hanford. The technical and quality assurance (QA) programs were found to be in continued compliance with the "Waste Analysis Plan" (WAP) of the WIPP *Hazardous Waste Facility Permit* (HWFP), the *Quality Assurance Program Document* (QAPD), the *Contact-Handled Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (CH-WAC), the *TRUPACT-II Authorized Methods for Payload Control* (TRAMPAC), and other CBFO requirements.

Based on Audit A-03-14, the CBFO is continuing the Hanford authority for the following:

S5000 - Debris Waste

Acceptable Knowledge (AK)
Headspace Gas (HSG) Sampling and
Analysis (including hydrogen and methane)
Real-time radiography (RTR)
Visual Examination (VE)
VE Technique
Non-destructive Assay (NDA)

S3000 - Homogeneous Solids

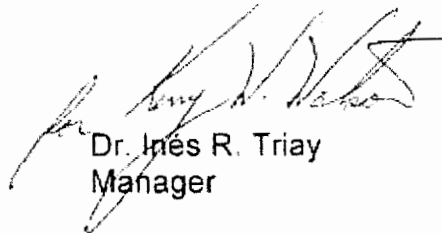
(Data Generation Level)
HSG Sampling and Analysis
(including hydrogen and methane)
VE Technique
NDA

In addition, the Hanford certification is expanded to include the new processes audited in A-03-14 (the approved use of the calorimeters is delineated in Attachment 1), as well as the processes that were observed during surveillance S-04-02. Hanford cannot ship S3000 - Homogeneous Solids to the Waste Isolation Pilot Plant until such time that the additional activities evaluated in audit A-04-06, conducted November 4-5, 2003, are approved and certified.

031207



TRU waste characterization, certification, or transportation using significantly revised or new processes, systems, or procedures must be evaluated by the CBFO prior to their implementation. See the attachments to this memorandum for complete lists of currently certified processes, procedures, documents, and systems at the Hanford Site.



Dr. Inés R. Triay
Manager

Attachments

cc: w/attachments

- K. Watson, CBFO *ED
- A. Holland, CBFO *ED
- M. Navarrete, CBFO *ED
- M. French, DOE-RL *ED
- G. Sanders, DOE-RL *ED
- T. Shrader, DOE-RL *ED
- R. Dunn, Hanford *ED
- D. DeRosa, Hanford *ED
- B. Walker, EEG *ED
- F. Marcinowski, EPA *ED
- E. Feltcorn, EPA *ED
- R. Joglekar, EPA *ED
- S. Zappe, NMED *ED
- J. Bennett, WTS *ED
- D. Standiford, WTS *ED
- M. Strum, WTS *ED
- WIPP Operating Record
- L. Greene, WRES
- P. Rodriguez, CTAC
- CTAC Document Control
- CBFO M&RC

*ED denotes Electronic Distribution

HANFORD CERTIFICATION PROGRAM STATUS

The CBFO Office of the National TRU Program Manager and the Quality Assurance Manager have evaluated the documentation supporting the compliance of the Hanford Sites' TRU waste programs. The recommendation to the CBFO Manager is that the previously issued certification be continued and the authority be expanded to include two new imaging passive-active neutron systems (IPAN) for characterizing CH TRU debris (S5000) at the Waste Receiving and Processing Plant (WRAP); and the ANTECH calorimeter AR-1 (endpoint and prediction methods), and calorimeters AR-5, AR-8, P-13, P-14, P-15, and Q-1 (endpoint method only), used in combination with a second segmented gamma scan assay system (SGSAS) for characterizing both debris (S5000) and homogeneous solids (S3000) generated at the Plutonium Finishing Plant (PFP). In addition, it is recommended that the authority be expanded to include analysis of headspace gas (HSG) samples for hydrogen and methane by gas chromatography using a thermal conductivity detector. Attachments 2 and 3 provide complete lists of all currently certified procedures and systems, including those evaluated for these new systems and processes during audit A-03-14 and surveillance S-04-02.

The following processes are recommended for approval at the Hanford Site:

Characterization of S5000 - Debris Waste

- Acceptable knowledge
- Headspace gas sampling and analysis (including hydrogen and methane)
- Radiography
- Visual examination
- Visual examination technique
- Non-destructive assay (IPAN, Calorimetry, SGSAS, GEA-A, and upon satisfactory completion of Cycle 10A PDP, the GEA-B system).
- Transportation

Characterization of S3000 - Homogeneous Solids (Data Generation Level)

- Headspace gas sampling and analysis (including hydrogen and methane)
- Visual examination technique
- Non-destructive assay (Calorimetry, SGSAS)

Hanford cannot ship S3000 - Homogeneous Solids to the Waste Isolation Pilot Plant until such time that the additional activities evaluated in audit A-04-06, conducted November 4-5, 2003, are approved and certified.

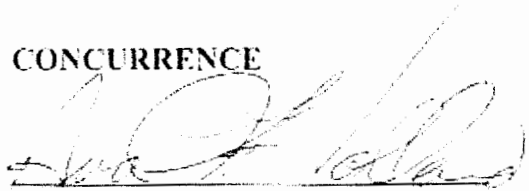
STATUS

- All program elements remain complete
- The following required site documents have been revised, approved, and are in place identifying how the site complies with the CBFO upper-tier documents and other CBFO requirements:
 - ❑ QAPjP
 - *Hanford Site Transuranic Waste Characterization Quality Assurance Project Plan*, HNF-2599, Rev. 10
 - ❑ WCP
 - *Hanford Site Transuranic Waste Certification Plan*, HNF-2600, Rev. 12
 - ❑ QAP
 - Section 5.0 of WCP
 - ❑ TRAMPAC and QA Plan
 - Section 4.0 of WCP
 - ❑ Packaging QA Plan
 - Section 5.0 of WCP
 - ❑ Certified Systems
 - see attachment 2 for a complete list of certified systems
 - ❑ Standard operating procedures
 - see attachment 3 for a complete procedure list
- Hanford Site participation in the following performance demonstration programs (PDPs):
 - ❑ NDA PDP participation was satisfactory in cycle 10A for the GEA-A, and IPAN-A and B, memo CBFO:NTP:MRB:VW:03-3085 dated September 16, 2003
 - ❑ HSG PDP participation was satisfactory in cycle 17A for the GC/MS, memo CBFO:NTP:MRB:VW:03-1713 dated April 22, 2003
 - ❑ HSG letter approving identical system VAP #6 – Memo CBFO:NTP:MRB:VW:03-3327 dated October 23, 2003
- Four CARs were issued during the audit: CAR 03-061, CAR 03-062, CAR 03-063, and CAR 03-064, all of which were closed on 07/29/03.
- The CBFO completed Audit A-03-14 on June 20, 2003 and issued Audit Report A-03-14 to Hanford on July 21, 2003. The Final Audit Report was issued to NMED on August 12, 2003 and was approved by NMED on 12/05/03.
- EPA approved two new IPAN systems, a second SGSAS, and one ANTECH calorimeter for both the endpoint and prediction methods on 08/07/03. EPA evaluated six other ANTECH calorimeters and approved them for the endpoint method only on 10/23/03. The EPA is currently evaluating all seven calorimeters for the equilibration and prediction modes and will issue an additional inspection report when that evaluation is complete.

RECOMMENDATION

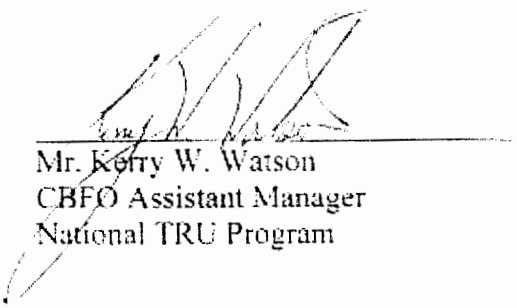
The recommendation to the CBFO Manager is that the previously issued Hanford characterization, certification, and transportation authorizations be continued and expanded to include: hydrogen and methane analysis for homogeneous solids and debris; two new IPAN systems for characterizing debris at the WRAP facility; the new ANTECH calorimeters (as defined in this attachment), and the SGSAS for characterizing both debris and homogeneous solids in the PFP. Attachments 2 and 3 provide the complete lists of systems and procedures currently certified at the Hanford Site.

CONCURRENCE



Ms. Ava L. Holland
Quality Assurance Manager

12/9/03
Date



Mr. Kerry W. Watson
CBFO Assistant Manager
National TRU Program

12/9/03
Date

Hanford Certified Equipment List

| WIPP # | Site Equipment Number | Title | Description | Components | Software |
|------------------------------|-------------------------|--|---|--|--|
| Headspace Gas | | | | | |
| 2HG1 | HSG US00033159 | Hewlett Packard GC/MS (7) | Gas Chromatograph/Mass Spectrometer – VOCs analysis | <input checked="" type="checkbox"/> GC/MS (method described in procedure LA-523-410) | <input checked="" type="checkbox"/> EnvironQuant ChemStation G1701BA |
| 2HG2 | HSG US00032565 | Hewlett Packard GC/MS (8) | Gas Chromatograph/Mass Spectrometer – VOCs analysis | <input checked="" type="checkbox"/> GC/MS (method described in procedure LA-523-410) | <input checked="" type="checkbox"/> EnvironQuant ChemStation G1701BA |
| 2HG3 | HSG S335A58373 | Agilent GC/MS (6) | Gas Chromatograph/Mass Spectrometer – VOCs analysis | <input checked="" type="checkbox"/> GC/MS (method described in procedure LA-523-410) | <input checked="" type="checkbox"/> EnvironQuant ChemStation G1701DA |
| Non-destructive Assay | | | | | |
| 2SG1 | PFP Room 170 SGSAS | PFP Room 170 SGSAS | PFP Room 170 Segmented Gamma Scan Assay System | <input checked="" type="checkbox"/> 2 HPGe detectors associated vertical drive and turntable <input checked="" type="checkbox"/> 1 30% relative SEGe and BEGe detector | <input checked="" type="checkbox"/> Genie PC Software Suite, version 2.2 including Gamma Waste Assay Software (GWAS), v.2.3 a <input checked="" type="checkbox"/> Multiple Group Analysis (MGA) v.9.5 Ci <input checked="" type="checkbox"/> PFP1MU <input checked="" type="checkbox"/> Automated Independent Technical Review (AITR) |
| 2SG2 | PFP Room 172 SGSAS | PFP Room 172 Segmented Gamma Scan Assay System | PFP Room 172 Segmented Gamma Scan Assay System | <input checked="" type="checkbox"/> 1 coaxial detector <input checked="" type="checkbox"/> 1 LEGe detector | <input checked="" type="checkbox"/> NDA-2000 Software, Version 3.1 <input checked="" type="checkbox"/> MGA v. 9.63B |
| 2GE1 | Canberra 104-ND-06-102A | GEA-A | Gamma Energy Assay System Unit A | <input checked="" type="checkbox"/> GEA system consisting of: <ul style="list-style-type: none"> o 4 high resolution coaxial germanium detectors to detect the main spectrum of gamma radiation. o 2 high resolution planar germanium detectors to detect the low energy gamma spectra | <input checked="" type="checkbox"/> Genie PC Spectroscopy System Software, version 2.2 <input checked="" type="checkbox"/> Gamma Waste Assay Software (GWAS), v 2.3.a <input checked="" type="checkbox"/> Multigroup Analysis Software (MGA) v 9.5 |
| 2GE2 | Canberra 104-ND-05-102B | GEA-B | Gamma Energy Assay System Unit B | <input checked="" type="checkbox"/> GEA system consisting of: <ul style="list-style-type: none"> o array of 4 high resolution coaxial germanium detectors to detect the main spectrum of gamma radiation o 2 high resolution planar germanium detectors to detect the low energy gamma spectra | <input checked="" type="checkbox"/> Genie PC Spectroscopy System Software, version 2.2 <input checked="" type="checkbox"/> Gamma Waste Assay Software (GWAS), v 2.3.a <input checked="" type="checkbox"/> Multigroup Analysis Software (MGA) v.9.5 |
| 2CA1 | ANTECH AR-1 | AR-1 | R-Series Calorimeter | <input checked="" type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |
| 2CA2 | ANTECH AR-5 | AR-5 | R-Series Calorimeter | <input checked="" type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |
| 2CA3 | ANTECH AR-8 | AR-8 | R-Series Calorimeter | <input checked="" type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |
| 2CA4 | ANTECH P-13 | P-13 | P-Series Calorimeter | <input checked="" type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |

| WIPP # | Site Equipment Number | Title | Description | Components | Software |
|------------------------------------|-------------------------|--------|--|--|---|
| 2CA5 | ANTECH P-14 | P-14 | P-Series Calorimeter | <input type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |
| 2CA6 | ANTECH P-15 | P-15 | P-Series Calorimeter | <input type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |
| 2CA7 | ANTECH Q-1 | Q-1 | Q-Series Calorimeter | <input type="checkbox"/> Air-bath calorimeter | MasterCAL Software, Version 9.1.3 |
| 2IP1 | Pajarito 104-ND-06-101A | IPAN-A | Imaging Passive-Active Neutron System A | Pajarito Scientific Corp. (now owned by BNFL) IPAN unit consisting of: <input type="checkbox"/> Shielded vault <input type="checkbox"/> Zetatron Neutron Generator <input type="checkbox"/> Multiple He ³ detector banks with Pulse Forming Networks | KEH.exe Version 3.28 KEH.xls Version 1.1 KEH_A_AMX.xls v 4.0A KEH_A_PMX.xls v 4.1A KEH_A_TMU.xls v 1.0A |
| 2IP2 | Pajarito 104-ND-05-101B | IPAN-B | Imaging Passive-Active Neutron System B | Pajarito Scientific Corp. (now owned by BNFL) IPAN unit consisting of: <input type="checkbox"/> Shielded vault <input type="checkbox"/> Zetatron Neutron Generator <input type="checkbox"/> Multiple He ³ detector banks with Pulse Forming Networks | KEH.exe version 3.28 KEH.xls version 1.1 KEH_B_AMX.xls v 4.0B KEH_B_PMX.xls v 4.1B KEH_B_TMU.xls v 1.0B |
| Non-destructive Examination | | | | | |
| 2RR1 | 104-ND-06-104A NDE-A | NDE-A | VJ Technology real-time radiography unit | VJ Technology RTR unit consisting of: <input type="checkbox"/> shielded vault <input type="checkbox"/> drum manipulator <input type="checkbox"/> 1 x-ray tube with diaphragm shutters <input type="checkbox"/> image intensifier <input type="checkbox"/> video camera and shutters <input type="checkbox"/> Linear Diode Array detector | None |
| 2RR2 | 104-ND-06-104B NDE-B | NDE-B | VJ Technology real-time radiography unit | VJ Technology RTR unit consisting of: <input type="checkbox"/> shielded vault <input type="checkbox"/> drum manipulator <input type="checkbox"/> 1 x-ray tube with diaphragm shutters <input type="checkbox"/> image intensifier <input type="checkbox"/> video camera and shutters <input type="checkbox"/> Linear Diode Array detector | None |

HANFORD LIST OF CERTIFIED PROCEDURES/DOCUMENTS

| # | PROCEDURE NUMBER | TITLE |
|----|--|--|
| 1 | DO-080-009 | Obtain Headspace Gas Samples of TRU Waste Containers |
| 2 | FSP-PFP-5-8, section 16.2 | Data Management |
| 3 | FSP-PFP-5-8, section 16.3 | Establishing QC Criteria for the SGSAS |
| 4 | FSP-PDP-5-8, section 16.4 | Calibration Confirmation for the SGSAS at PFP |
| 5 | HNF-2599 | Hanford Site Transuranic Waste Characterization Quality Assurance Project Plan |
| 6 | HNF-2600 | Hanford Site Transuranic Waste Certification Plan |
| 7 | HNF-4050 | Total Measurement Uncertainty for Nondestructive Assay of Transuranic Waste at the Receiving and Processing Facility |
| 8 | HNF-4051 | Quality Assurance Objectives for Nondestructive Assay of Transuranic Waste at the Receiving and Processing Facility |
| 9 | HNF-5148 | Calibration Report for the WRAP Gamma Energy Assay System |
| 10 | LA-523-410 | Determination of VOCs in TRU/Mixed Waste Container Headspace |
| 11 | LA-523-426 Reactivated September 10, 2003 | Determination of Permanent Gases in Waste Container Headspace - |
| 12 | LO-080-407 | Cleaning SUMMA Canisters for TRU Headspace Gas Sampling |
| 13 | LO-090-450 | TRU Project Sample Storage, COC, Acceptance, and Disposal |
| 14 | WMP-350, section 2.2 | Calculation of Assay Results |
| 15 | WMP-350, section 2.3 | Data Management |
| 16 | WMP-350, section 2.5 | GEA Energy and Efficiency Setup and Baseline Establishment |
| 17 | WMP-350, section 2.8 | WRAP NDA Measurement Control Program |
| 18 | WMP-350, section 2.9 | Performing Calibration Verifications and Confirmation for Nondestructive Assay at WRAP |
| 19 | WMP-400, section 1.1.2 | TRU Graded Approach |
| 20 | WMP-400, section 1.2.1 | TRU Training and Qualification Plan |
| 21 | WMP-400, section 1.2.2 | Qualification and Certification of Inspection and Test Personnel |
| 22 | WMP-400, section 1.2.3 | Qualification and Certification of Audit Personnel |
| 23 | WMP-400, section 1.3.1 | TRU Corrective Action Management |
| 24 | WMP-400, section 1.3.2 | TRU Nonconforming Item Reporting and Control System |
| 25 | WMP-400, section 1.3.3 | TRU Corrective Action Reporting and Control |
| 26 | WMP-400, section 1.4.1 | TRU Document Control |
| 27 | WMP-400, section 1.5.1 | TRU Records Management |
| 28 | WMP-400, section 2.1.1 | TRU Process Control |
| 29 | WMP-400, section 2.1.2 | TRU Operating Procedure Preparation and Approval |
| 30 | WMP-400, section 2.1.3 | TRU Administrative Procedure Preparation and Approval |
| 31 | WMP-400, section 2.1.4 | TRU Handling and Storage |
| 32 | WMP-400, section 2.1.5 | TRU Transportation Logistics |
| 33 | WMP-400, section 2.1.6 | TRU Analytical Procedure Process |
| 34 | WMP-400, section 2.3.1 | TRU Procurement Planning |
| 35 | WMP-400, section 2.3.2 | TRU Procurement Document Control |
| 36 | WMP-400, section 2.3.3 | TRU Control of Purchased Items and Services |
| 37 | WMP-400, section 2.4.1 | TRU Inspection Control |
| 38 | WMP-400, section 2.4.2 | TRU Test Control |
| 39 | WMP-400, section 2.4.4 | TRU Control of Measuring, Test, and Data Collecting Equipment |
| 40 | WMP-400, section 2.4.5 | TRU Identification and Control of Items |
| 41 | WMP-400, section 3.1.1 | TRU Management Assessment |
| 42 | WMP-400, section 3.1.2 | Quality Assurance Reports to Management |
| 43 | WMP-400, section 3.2.1 | TRU Independent Assessments |

| | | |
|-----|-------------------------|--|
| 44. | WMP-400, section 3.2.2 | TRU Surveillance Program |
| 45. | WMP-400, section 6.1.1 | TRU Software Quality Assurance |
| 46. | WMP-400, section 7.1.1 | TRU Waste Data Quality Objectives Reconciliation and Reporting |
| 47. | WMP-400, section 7.1.10 | TRU Waste Visual Examination Technique |
| 48. | WMP-400, section 7.1.3 | Transuranic Waste Repackaging, Visual Examination, and Sampling |
| 49. | WMP-400, section 7.1.4 | Sampling Design and Data Analysis for RCRA Characterization and Visual Examination of Retrievably Stored Transuranic Waste |
| 50. | WMP-400, section 7.1.5 | WIPP Waste Information System Data Entry and Reporting |
| 51. | WMP-400, section 7.1.6 | TRU Waste Project Level Data Validation and Verification |
| 52. | WMP-400, section 7.1.7 | TRU Waste Container Management Activities |
| 53. | WMP-400, section 7.1.8 | Transuranic Waste Transportation and Disposal Certification |
| 54. | WMP-400, section 7.1.9 | Acceptable Knowledge Documentation Management |
| 55. | WMP-400, section 8.1.1 | Logkeeping Practices for WIPP Activities for Headspace Gas Sampling and Analysis |
| 56. | WMP-400, section 8.1.8 | Headspace Gas Sampling and Analytical Results |
| 57. | WRP1-OP-0503 | Move Drums Throughout WRAP |
| 58. | WRP1-OP-0521 | Receive and Load TRUPACT-II Containers |
| 59. | WRP1-OP-0522 | Assemble and Stretch Wrap TRUPACT-II Payload |
| 60. | WRP1-OP-0524 | Helium Leak Test of the TRUPACT-II Shipping Container |
| 61. | WRP1-OP-0722 | TRU RWM Glovebox Automatic Mode Operation |
| 62. | WRP1-OP-0725 | TRU Sorting Glovebox Operation |
| 63. | WRP1-OP-0726 | TRU Loadout Glovebox Operations |
| 64. | WRP1-OP-0729 | Visual Examination |
| 65. | WRP1-OP-0905 | Imaging Passive/Active Neutron Assay Operation |
| 66. | WRP1-OP-0906 | Gamma Energy Assay Operations |
| 67. | WRP1-OP-0908 | Operation of Drum Nondestructive Examination System |
| 68. | WRP1-OP-0911 | Storage and Use of Special Nuclear Material (for PDP work only) |
| 69. | WRP1-OP-1225 | Radiological Support of TRUPACT-II Shipping and Receiving |
| 70. | ZA-400-301 | SGSAS Energy and Efficiency Setup and Baseline Determination |
| 71. | ZA-400-302 | Calculation of Assay Results |
| 72. | ZA-400-303 | Energy and Efficiency Setup and Baseline Determination Using NDA 2000 |
| 73. | ZA-400-304 | ANTECH Calorimeter Calibration |
| 74. | ZA-948-385 | Nondestructive Assay Using the Segmented Gamma Assay System (SGSAS) |
| 75. | ZA-948-392 | NDA Using the NDA 2000 (Room 172 SGAS) 2 nd SGSAS |
| 76. | ZA-948-393 | NDA Using Room 172 ANTECH Calorimeters |
| 77. | ZO-160-080 | Pipe-N-Go Operations |
| 78. | ZO-160-081 | Pu/Al Alloys Operation |
| 79. | ZO-160-082 | Residue Solid Sampling |

Hanford Inactive or Cancelled Procedures

| # | Procedure Number | Procedure Title | Date |
|----|----------------------|---|---------|
| 1. | WMP-350, section 2.4 | Quality Assurance Objectives for NDA at WRAP Cancelled - Replaced by WMP-350, sections 2.8 and 2.9 | 5/17/02 |
| 2. | FSP-PFP-5.8, 16.1 | Quality Assurance Objectives for NDA at PFP Cancelled - Replaced by FSP-PFP-5-8 sections 16.3 and 16.4 | 5/17/02 |