

RMIS View/Print Document Cover Sheet

This document was retrieved from the Boeing ISEARCH System. It is intended for Information only and may not be the most recent or updated version. Contact a Document Service Center (see Hanford Info for locations) if you need additional retrieval information.

Accession #: D295184949

Document #: SD-CP-FAR-002

Title/Desc:

PUREX PLANT DEACTIVATION FUNCTION ANALYSIS REPORT

Pages: 33

Sta 4
 NOV 06 1995

ENGINEERING DATA TRANSMITTAL

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Systems And Materials	4. Related EDT No.: NA
5. Proj./Prog./Dept./Div.: 10250	6. Cog. Engr.: Dennis P. Lund	7. Purchase Order No.: NA
8. Originator Remarks: Please approve the attached PUREX Plant Deactivation Function Analysis Report. All previous comments have been incorporated and/or resolved. Mark column (H), sign and date next to your name.		9. Equip./Component No.: NA
11. Receiver Remarks:		10. System/Bldg./Facility: PUREX
		12. Major Assm. Dwg. No.: NA
		13. Permit/Permit Application No.: NA
		14. Required Response Date: NA

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-CP-FAR-002	N/A	0	PUREX Plant Deactivation Function Analysis Report	N/A	2	1	1

16. KEY			
Approval Designator (F)	Reason for Transmittal (G)		Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)		(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.	
1	1	Cog. Eng. D.P. Lund	<i>D Lund</i>	10-17-95	R3-56	Central Files	<i>[Signature]</i>	11-1-95	S6-19			
1	1	Cog. Mgr. R.R. Borisch	<i>R.R. Borisch</i>	11-1-95	R3-56		<i>[Signature]</i>	11-1-95	S6-19			
-		QA	N/A									
-		Safety	N/A									
-		Env.	N/A									
1	1	PUREX; D.G. Harlow	<i>[Signature]</i>	11-1-95	S6-19							
1	1	PUREX; W.A. Peiffer	<i>[Signature]</i>	11-1-95	S6-19							

18. Signature of EDT Originator <i>D Lund</i> 11-1-95	19. Authorized Representative Date for Receiving Organization N/A	20. Cognizant Manager Date <i>R.R. Borisch</i> 11-1-95	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
--	--	---	--

RELEASE AUTHORIZATION

Document Number: WHC-SD-CP-FAR-002, REV 0

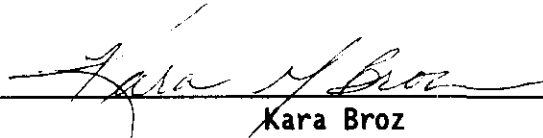
Document Title: PUREX Plant Deactivation Function Analysis Report

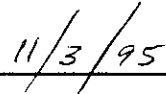
Release Date: 11/3/95

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:




Kara Broz


11/3/95

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

This report has been reproduced from the best available copy. Available in paper copy. Printed in the United States of America. To obtain copies of this report, contact:

Westinghouse Hanford Company - Document Control Services
P.O. Box 1970, Mailstop H6-08, Richland, WA 99352
Telephone: (509) 372-2420; Fax: (509) 376-4989

SUPPORTING DOCUMENT		1. Total Pages 30
2. Title PUREX Plant Deactivation Function Analysis Report	3. Number WHC-SD-CP-FAR-002	4. Rev No. 0
5. Key Words PUREX Function Analysis Report, Function Analysis Report, PUREX Deactivation Function Analysis	6. Author Name: DP Lund  Signature Organization/Charge Code 10250/K1C11	
7. Abstract The document contains the functions, function definitions, function interfaces, function interface definitions, Input Computer Automated Manufacturing Definition (IDEFO) diagrams, and a function hierarchy chart that describe what needs to be performed to deactivate PUREX.		
8. RELEASE STAMP <div data-bbox="1047 1585 1502 1819" style="border: 1px solid black; padding: 5px; text-align: center;">OFFICIAL RELEASE BY WHC  DATE NOV 06 1995 <i>Sta 4</i></div>		

WHC-SD-CP-FAR-002, Revision 0

**PUREX
DEACTIVATION
FUNCTION ANALYSIS REPORT**

September 1995

Prepared for:

**WESTINGHOUSE HANFORD COMPANY
P.O. Box 1970
Richland, Washington 99352**

Prepared by:
PUREX Working Group

PUREX PLANT DEACTIVATION FUNCTION ANALYSIS REPORT

Table of Contents

1.0	INTRODUCTION	1-1
1.1	OBJECTIVE	1-1
1.2	MISSION STATEMENT	1-2
2.0	PUREX FUNCTIONS	2-1
2.1	RELATIONSHIP TO HANFORD SITE FUNCTIONAL HIERARCHY	2-1
2.2	FUNCTION HIERARCHY	2-2
2.3	FUNCTION DEFINITION TABLE	2-2
3.0	FUNCTIONAL INTERFACES AND DEPENDENCIES	3-1
3.1	IDEF DIAGRAMS	3-1
3.2	INTERFACE DEFINITIONS	3-1
4.0	ISSUES	4-1
	ADDENDUM 1 - FUNCTIONAL HIERARCHY	A1-1
	ADDENDUM 2 - FUNCTION DEFINITIONS	A2-1
	ADDENDUM 3 - INTERFACE DIAGRAMS	A3-1
	ADDENDUM 4 - INTERFACE DEFINITIONS	A4-1

1.0 INTRODUCTION

1.1 OBJECTIVE

This report compiles the products of several steps in the system engineering approach and defines the content and organization of the Hanford Site cleanup effort for the Plutonium Uranium Extraction (PUREX) Plant. A summary of the steps are listed below:

- Functional Analysis: The functions that PUREX must perform are derived in this step. These functions include technical functions that a system must perform, other functions that must be carried out in support of the technical functions (i.e., organizational/management functions), interdependencies among the functions, and functional performance criteria. The functional analysis process produces a functional hierarchy with detailed descriptions of all functions and interfaces.
- Requirement Identification: Statutory, regulatory, technical, social, and economic requirements with which a system must comply are identified in this step. These requirements fall into two classes: mission-driven requirements and externally imposed requirements. This step produces a baseline list including requirement sources and their descriptions.
- Requirements Allocation to System Functions: The identified requirements are allocated to the system functions producing a requirements baseline for the systems engineering process.
- Innovation of Alternative Solutions: Based on the products of the systems engineering steps described above different structural, physical and organizational configurations that provide system solutions are developed.

This report contains the products from the first three steps described above. The sections in this report are: 2.0 Functional Analysis, 3.0 Functional Interfaces and Dependencies, 4.0 Requirements Identification and Allocations, and 5.0 Issues. Addenda provide all of the back up information relating to PUREX. The addenda, except Addendum 5, are reports generated from RDD-100, a computer program by Ascent Logic.

1.2 MISSION STATEMENT

The PUREX Mission Statement was developed during mission analysis and is reported in WHC-SD-CP-MAR-002 PUREX Plant Deactivation Mission Analysis Report. It is repeated below:

"The purpose of the PUREX Deactivation Project is to prepare PUREX for Decontamination and Decommissioning (D&D) within a five year time frame. This will be accomplished by establishing a passively safe and environmentally secure configuration of the PUREX Plant, that can be preserved for a 10-year horizon. During deactivation, appropriate portions of the safety envelope will be maintained to ensure deactivation takes place in a safe and regulatory compliant manner. Stakeholders will be actively involved during deactivation."

2.0 PUREX FUNCTIONS

Identifying PUREX functions and subfunctions creates a functional hierarchy called a tree. The analysis begins with the top level function, "Deactivate PUREX." It is broken down into a number of major, necessary, and sufficient functions that, when completed in the prescribed logic, will ensure that the mission to deactivate PUREX is accomplished. The functional decomposition process is repeated for successively more detailed functional levels until known (precedented) solutions are available. Each function and subfunction is precisely defined. System function definitions are essential to establish what PUREX must do to execute its mission successfully. Formal definitions create understanding of all aspects of the system being engineered (i.e. hardware, software, facility, processes, services, or modifications) and provide a mechanism to insure that all parts of the system contribute to fulfill the PUREX mission.

The ultimate function of the PUREX system is to perform operations that satisfy the mission need identified in WHC-SD-CP-MAR-002 PUREX Plant Deactivation Mission Analysis Report repeated below:

"PUREX has no future mission, and is expensive to maintain in its current configuration. Nuclear, radioactive and hazardous materials are not currently in an acceptable configuration for turn over to Environmental Restoration (ER). PUREX must be deactivated to a point where only minimal maintenance and surveillance is required to maintain the facility for 10 years or more while awaiting D&D and where safe and compliant D&D operations can take place."

2.1 RELATIONSHIP TO HANFORD SITE FUNCTIONAL HIERARCHY

The PUREX mission statement developed during the PUREX mission analysis is consistent with the top level (0 Cleanup Hanford) and the first, second and third level functions (4.0 Remedy Unsafe and Unacceptable Conditions, 4.1 Deactivate Facilities and 4.1.1 Deactivate Facilities with Special Nuclear Materials and Nuclear Materials (Type 1 Facility) first identified in WHC-EP-0722 "Systems Engineering Functions and Requirements for the Hanford Cleanup Mission: First Issue" of January 1994 and later revised and maintained as the Hanford Site Integrated Technical Baseline (HSITB). This function hierarchy is shown in Figure 1. The PUREX mission begins with function 4.1.1.6 Deactivate PUREX.

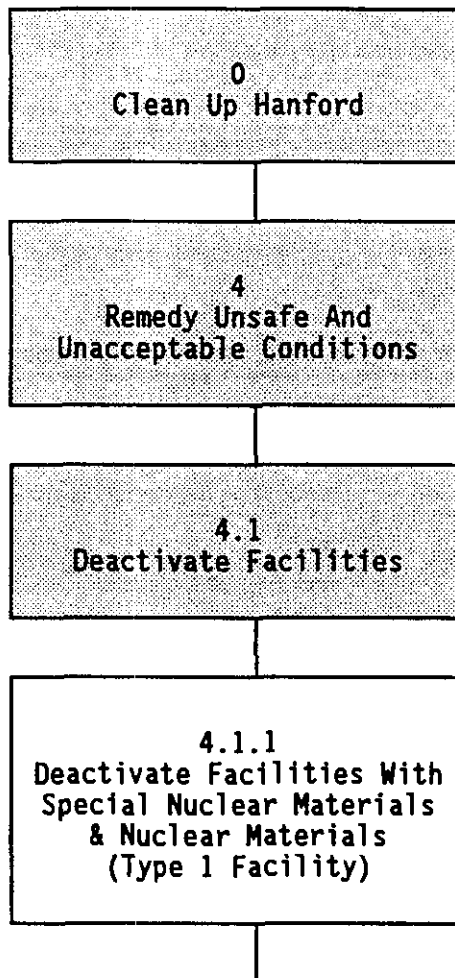


Figure 1. Hanford Site Function Hierarchy

2.2 FUNCTION HIERARCHY

The detailed PUREX functional hierarchy is presented in Addendum 1. It begins at level four (4.1.1.6 Deactivate PUREX) and continues to level six and in some places level seven.

2.3 FUNCTION DEFINITION TABLE

The definitions of the PUREX functions in the functional hierarchy in Addendum 1 are presented in Addendum 2.

3.0 FUNCTIONAL INTERFACES AND DEPENDENCIES

Another way to describe functions is using functional interface diagrams. They establish the dependencies between the functions defined in the functional hierarchy. By conceptualizing each function as a process where inputs, resources, and controls are transformed into outputs, the relationships between functions can be identified. The outputs of one function become the inputs of other functions. Function inputs (initial-state condition) enter from the left. Outputs (end-state condition) exit to the right. Controls enter from the top, and resources (sometimes called mechanisms) enter from the bottom. Inputs, outputs, controls and resources are all called interfaces and/or products and are defined for each system function.

3.1 IDEF DIAGRAMS

The PUREX interface diagrams are provided in the form of IDEF (ICOM Definition Method, ICOM is Input Controls Output Mechanisms) diagrams produced from the RDD system model and are found in Addendum 3.

3.2 INTERFACE DEFINITIONS

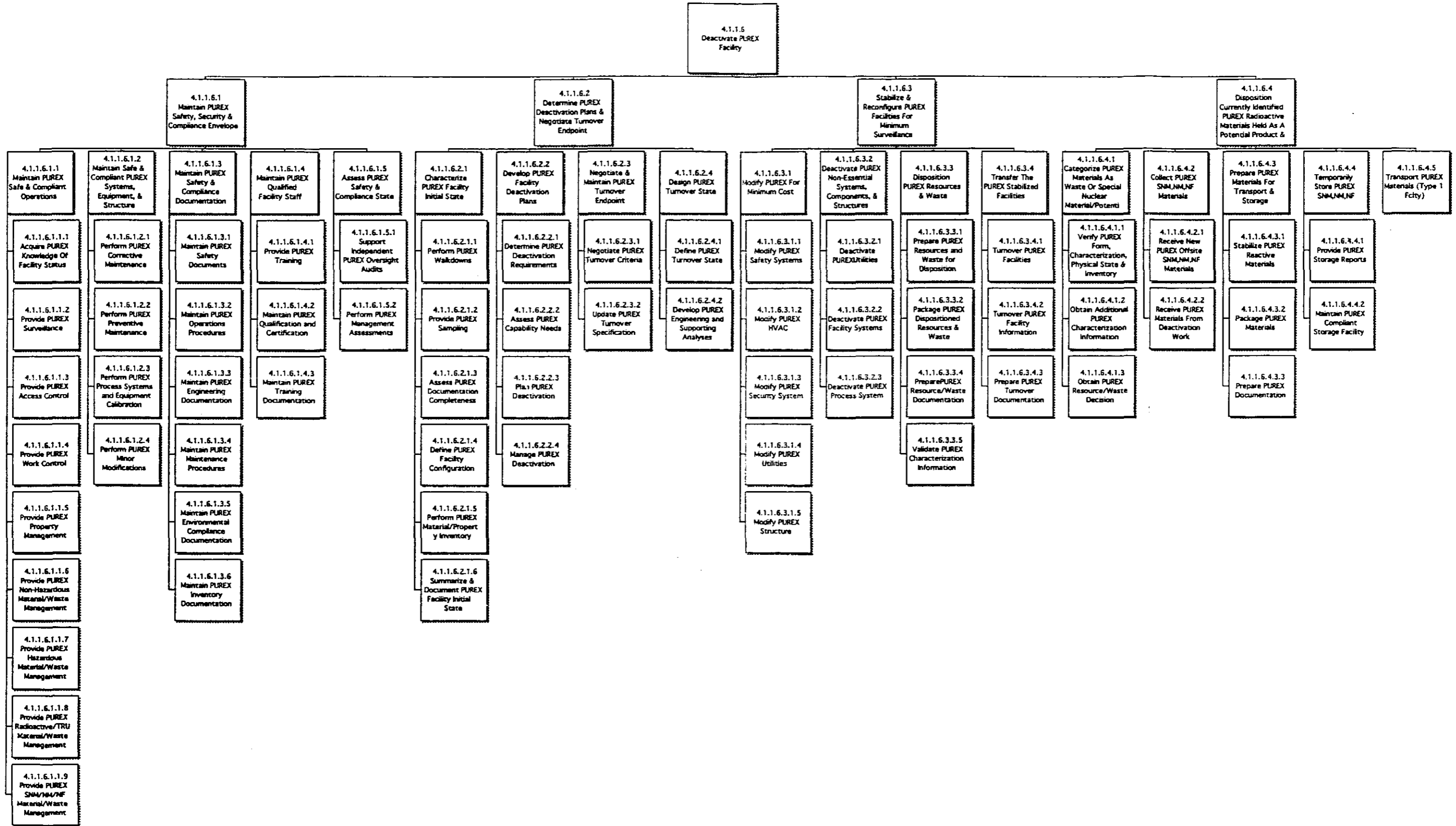
The PUREX interface definitions, presented in Addendum 4, provides descriptions of all the interfaces found on the IDEF diagrams in Addendum 3. Inputs, outputs, controls and resources are all considered interfaces and are also sometimes called products.

4.0 ISSUES

Listed below are issues that were identified in the PUREX Functional Analysis workshops. These issues will be further refined and clarified in order to effectively attached them to the functions and interfaces contained in the systems model in RDD-100.

- Disposition of Single Pass Reactor Fuel
- Disposition of N Reactor Fuel
- Develop D&D endpoint criteria
- Contaminated solvent disposal
- Contaminated acid disposal

ADDENDUM 1 - FUNCTIONAL HIERARCHY



ADDENDUM 2 - FUNCTION DEFINITIONS

[4.1.1.6] Deactivate PUREX Facility

Function	Definitions
4.1.1.6	Deactivate PUREX Facility <i>Deactivates contaminated buildings, utilities, and services; stabilizes and safely stores or removes radioactive and hazardous materials; prepares turnover packages and transitions useable resources associated with the PUREX complex.</i>
4.1.1.6.1	Maintain PUREX Safety, Security & Compliance Envelope <i>Maintains the facility structure, qualified staff, safe and compliant equipment, documentation and provides assessment of safety and compliance states. Provides all necessary resources for safe and compliant operation in accordance with governing safety codes and regulations.</i>
4.1.1.6.1.1	Maintain PUREX Safe & Compliant Operations <i>Assesses and maintains the facility operations in a safe condition that is compliant with applicable environmental requirements, DOE orders, and all other applicable codes, standards, and company procedures.</i>
4.1.1.6.1.1.1	Acquire PUREX Knowledge Of Facility Status <i>Acquires knowledge of the facility status, configuration, facility operating systems, contents, and inventories required to enable deactivation.</i>
4.1.1.6.1.1.2	Provide PUREX Surveillance <i>Provides surveillance of the facility operations and operating systems, develop acutely unsafe condition action plans, perform OSR surveillance procedures, environmental monitoring, RCRA tracking, and surveillance of safety analysis compliance.</i>
4.1.1.6.1.1.3	Provide PUREX Access Control <i>Provides access control to and internal to the facility for safeguards and security, safety, and radiological purposes.</i>
4.1.1.6.1.1.4	Provide PUREX Work Control <i>Provides a job control system for the facility activities.</i>
4.1.1.6.1.1.5	Provide PUREX Property Management <i>Provides property management for the facility in accordance with DOE orders and WHC procedures.</i>
4.1.1.6.1.1.6	Provide PUREX Non-Hazardous Material/Waste Management <i>Contains, controls, dispositions and documents non-hazardous material and waste in accordance with safe and applicable standards.</i>
4.1.1.6.1.1.7	Provide PUREX Hazardous Material/Waste Management <i>Provides containment, control, disposition and documentation of hazardous materials and wastes in conformance with safety requirements and all applicable hazardous material/wastes codes and regulations.</i>
4.1.1.6.1.1.8	Provide PUREX Radioactive/TRU Material/Waste Management <i>Provides containment, control, disposition and documentation of radioactive material and waste in accordance with safety requirements and all applicable codes and regulations.</i>
4.1.1.6.1.1.9	Provide PUREX SNM/NM/NF Material/Waste Management <i>Provides all special PUREX management operations in accordance with applicable codes and regulations including proper surveillance and security.</i>
4.1.1.6.1.2	Maintain Safe & Compliant PUREX Systems, Equipment, & Structure <i>Maintains the facility systems and infrastructure in the operational condition dictated by approved safety and compliance documentation (includes environmental regulations).</i>

[4.1.1.6] Deactivate PUREX Facility

Function	Definitions
4.1.1.6.1.2.1	Perform PUREX Corrective Maintenance <i>All maintenance that brings systems and equipment back to their operational states after failure.</i>
4.1.1.6.1.2.2	Perform PUREX Preventive Maintenance <i>Preventive maintenance activities to minimize all unplanned events and premature equipment failures.</i>
4.1.1.6.1.2.3	Perform PUREX Process Systems and Equipment Calibration <i>Performs facility equipment, instrumentation, and process system calibrations to ensure accuracy.</i>
4.1.1.6.1.2.4	Perform PUREX Minor Modifications <i>Performs minor modifications to facility systems or structure to ensure safe and compliant operations during the facility deactivation process.</i>
4.1.1.6.1.3	Maintain PUREX Safety & Compliance Documentation <i>Maintains all required facility safety, compliance, engineering, inventory, and operating documentation during facility deactivation.</i>
4.1.1.6.1.3.1	Maintain PUREX Safety Documents <i>Maintains documentation necessary to ensure safe deactivation activities. This includes FSARs, ISBs, CSERs, ETC..</i>
4.1.1.6.1.3.2	Maintain PUREX Operations Procedures <i>Maintains operations procedures and documentation to support economic, safety, or environmental compliance requirements.</i>
4.1.1.6.1.3.3	Maintain PUREX Engineering Documentation <i>Maintains configuration drawings and associated engineering documentation required to operate and maintain the facility in a safe and compliant status.</i>
4.1.1.6.1.3.4	Maintain PUREX Maintenance Procedures <i>Maintains maintenance procedure documentation necessary for safe, efficient, and compliant operations.</i>
4.1.1.6.1.3.5	Maintain PUREX Environmental Compliance Documentation <i>Maintains appropriate regulatory files and other related environmental documentation to assure and prove environmental compliance.</i>
4.1.1.6.1.3.6	Maintain PUREX Inventory Documentation <i>Maintains nuclear materials documentation in compliance with DOE orders. Also performs hazardous material, spare parts and spare equipment inventories.</i>
4.1.1.6.1.4	Maintain PUREX Qualified Facility Staff <i>Provides facility specific training, testing, and training records maintenance to ensure facility staff remain trained, qualified, and certified (as required) throughout the facility deactivation process.</i>
4.1.1.6.1.4.1	Provide PUREX Training <i>Provides all training related to the activities necessary to deactivate the facilities and ensure they remain in a safe and compliant condition.</i>
4.1.1.6.1.4.2	Maintain PUREX Qualification and Certification <i>Provides periodic personnel skills check, assessment, and testing required to maintain necessary qualifications and certifications.</i>
4.1.1.6.1.4.3	Maintain PUREX Training Documentation <i>Maintains applicable worker training documentation. Documentation includes worker safety and competency qualification and certification.</i>

[4.1.1.6] Deactivate PUREX Facility

Function	Definitions
4.1.1.6.1.5	Assess PUREX Safety & Compliance State <i>Performs/responds to oversight assessments and perform appropriate self assessments of the facility deactivation activities to evaluate the facility and operations safety and compliance status.</i>
4.1.1.6.1.5.1	Support Independent PUREX Oversight Audits <i>Performs and responds to independant oversight audits.</i>
4.1.1.6.1.5.2	Perform PUREX Management Assessments <i>Performs self assessments of facility operations to ensure that safety and compliance are maintained.</i>
4.1.1.6.2	Determine PUREX Deactivation Plans & Negotiate Turnover Endpoint <i>Assess the current state of the facility, identify and/or negotiate material and equipment disposition requirements, develop plans to deactivate facilities, and negotiate and administratively maintain the desired facility turnover endpoint specifications. Establish and maintain a long-term archive of facility information.</i>
4.1.1.6.2.1	Characterize PUREX Facility Initial State <i>Identifies the current state of the facility infrastructure, process systems and other facility systems, facility contents, equipment, instrumentation, and utilities.</i>
4.1.1.6.2.1.1	Perform PUREX Walkdowns <i>Performs walkdowns to compare actual facility state with available documentation.</i>
4.1.1.6.2.1.2	Provide PUREX Sampling <i>Obtains samples to characterize contamination and verify contamination levels, and to assist with PUREX inventory verification.</i>
4.1.1.6.2.1.3	Assess PUREX Documentation Completeness <i>Assesses existing documentation for completeness and verifies with walkdowns, sampling, and other observations.</i>
4.1.1.6.2.1.4	Define PUREX Facility Configuration <i>Reviews facility drawing packages to determine accuracy and develop additional configuration control documents as required to document actual configuration of facility infrastructure, utilities, process systems, equipment, and instrumentation.</i>
4.1.1.6.2.1.5	Perform PUREX Material/Property Inventory <i>Performs inventory of all property and materials to aid in the assessment of facility initial state.</i>
4.1.1.6.2.1.6	Summarize & Document PUREX Facility Initial State <i>Develops and provides a documentation summary or matrix that clearly and completely defines facility state.</i>
4.1.1.6.2.2	Develop PUREX Facility Deactivation Plans <i>Develops strategies to best implement deactivation requirements, plans the facility deactivation, and identifies and/or negotiates facility equipment disposition requirements.</i>
4.1.1.6.2.2.1	Determine PUREX Deactivation Requirements <i>Determines and documents all facility specific administrative, safety, environmental, regulatory, DOE orders, codes, standards, and other requirements.</i>
4.1.1.6.2.2.2	Assess PUREX Capability Needs <i>Assesses personnel, material, equipment, facility, and technology needs necessary to support facility deactivation activities.</i>
4.1.1.6.2.2.3	Plan PUREX Deactivation <i>Develops deactivation strategy, plans, and schedules.</i>

[4.1.1.6] Deactivate PUREX Facility

Function	Definitions
4.1.1.6.2.2.4	Manage PUREX Deactivation
4.1.1.6.2.3	Negotiate & Maintain PUREX Turnover Endpoint <i>Negotiates and maintains the desired facility turnover endpoint specifications.</i>
4.1.1.6.2.3.1	Negotiate PUREX Turnover Criteria <i>Negotiates turnover criteria with D&D or the transition of resources to beneficial uses organization.</i>
4.1.1.6.2.3.2	Update PUREX Turnover Specification <i>Maintains the negotiated facility deactivation turnover specification.</i>
4.1.1.6.2.4	Design PUREX Turnover State <i>Specifies turnover facility, equipment, and material status; develops facility deactivation turnover specification; develops deactivation engineering documentation and other supporting analyses.</i>
4.1.1.6.2.4.1	Define PUREX Turnover State <i>Defines configuration specifics, negotiates turnover facility state, and develops negotiated facility deactivation turnover specification.</i>
4.1.1.6.2.4.2	Develop PUREX Engineering and Supporting Analyses <i>Provides engineering and supporting analyses to support engineered deactivation package development. Examples include safety analyses, transportation analyses, development of NEPA documentation, and permit preparation.</i>
4.1.1.6.3	Stabilize & Reconfigure PUREX Facilities For Minimum Surveillance <i>Deactivates nonessential systems, system components, and physical structures, and takes other actions as required to minimize environmental, public, and personnel hazards. Takes these actions consistent with minimizing continuing facility costs.</i>
4.1.1.6.3.1	Modify PUREX For Minimum Cost <i>Reconfigures plant systems and structure to minimize cost of maintenance and operation during deactivation phase and while waiting for D&D while retaining minimum acceptable compliance with safety and environmental requirements.</i>
4.1.1.6.3.1.1	Modify PUREX Safety Systems <i>Makes any appropriate modifications to safety systems such as elimination or conversion (wet to dry) of fire systems.</i>
4.1.1.6.3.1.2	Modify PUREX HVAC <i>Modifies HVAC for minimum acceptable heating, ventilation and radiological containment requirements.</i>
4.1.1.6.3.1.3	Modify PUREX Security System <i>Reconfigures security systems consistent with SNM inventory and security requirements.</i>
4.1.1.6.3.1.4	Modify PUREX Utilities <i>Modifies or downsizes utility systems to satisfy reduced needs.</i>
4.1.1.6.3.1.5	Modify PUREX Structure <i>Modifies structural aspects if savings can be obtained (e.g. adding a firewall rather than maintaining a fire suppression system).</i>
4.1.1.6.3.2	Deactivate PUREX Non-Essential Systems, Components, & Structures <i>Deactivates non-essential systems, system components, and physical structures while maintaining safety and environmental compliance.</i>
4.1.1.6.3.2.1	Deactivate PUREX Utilities <i>Deactivates water, sewer, electrical, HLAN, steam, telephone, power, fire system as appropriate to still maintain minimum safety and environmental compliance.</i>

[4.1.1.6] Deactivate PUREX Facility

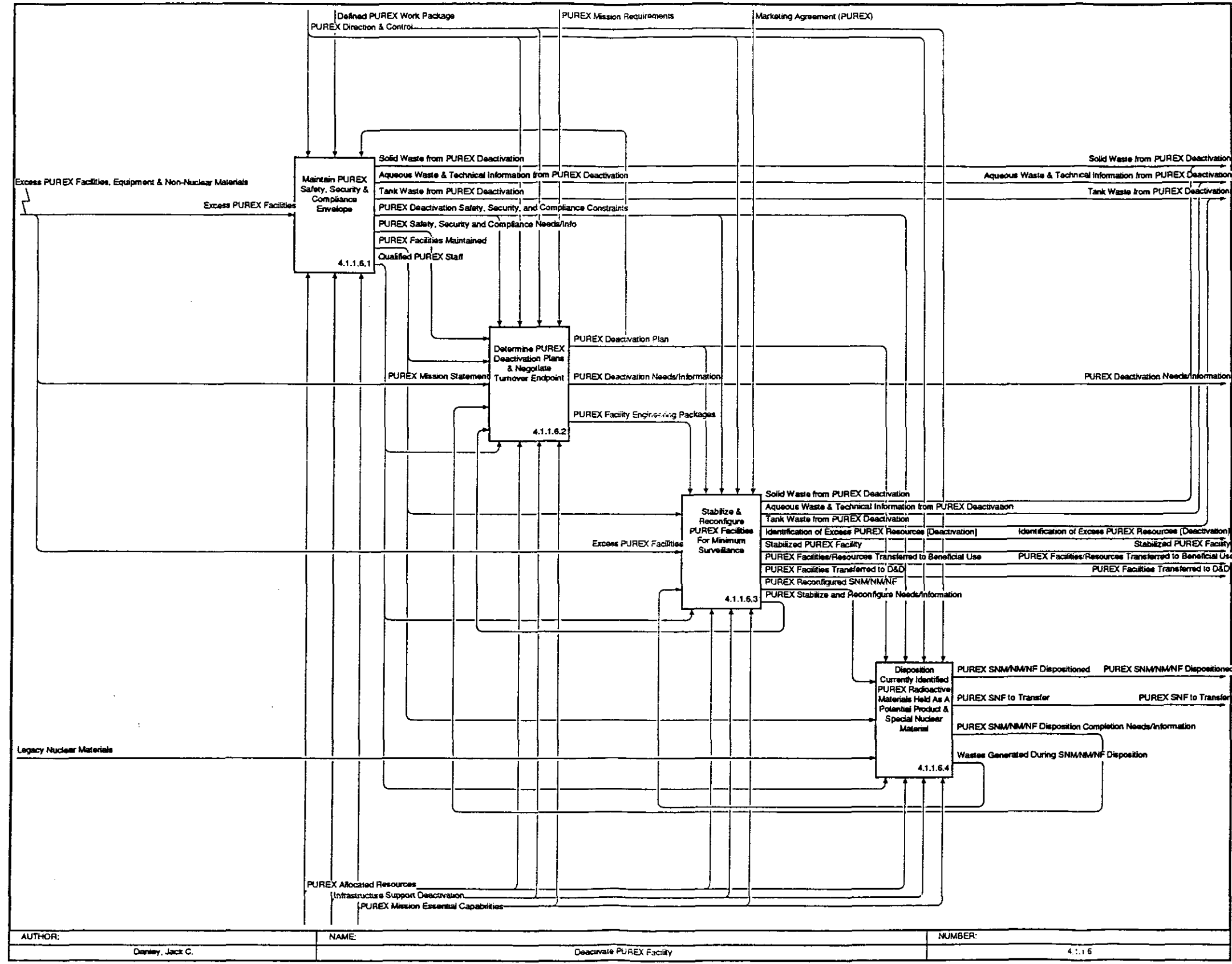
Function	Definitions
4.1.1.6.3.2.2	Deactivate PUREX Facility Systems <i>Deactivates facility systems as much as possible to minimize operating and maintenance costs and still maintain minimum safety and environmental compliance.</i>
4.1.1.6.3.2.3	Deactivate PUREX Process System <i>Deactivates, drains, flushes, removes, etc., process systems in accordance with negotiated turnover specifications.</i>
4.1.1.6.3.3	Disposition PUREX Resources & Waste <i>Accumulates, packages, and disposes resources and waste for PUREX facilities containing SNM/NM/NF.</i>
4.1.1.6.3.3.1	Prepare PUREX Resources and Waste for Disposition <i>Accumulates, drains, collects, and disposes material, equipment, consumables, etc., and waste or resources for disposal or reuse.</i>
4.1.1.6.3.3.2	Package PUREX Dispositioned Resources & Waste <i>Packages materials for disposal or reuse.</i>
4.1.1.6.3.3.4	Prepare PUREX Resource/Waste Documentation <i>Prepares any documentation required for disposal or certification for reuse or excess.</i>
4.1.1.6.3.3.5	Validate PUREX Characterization Information <i>Validates waste or reusable material characterization information.</i>
4.1.1.6.3.4	Transfer The PUREX Stabilized Facilities <i>Maintains, and effects transfer of facility structure and surrounding area to D&D organizations for remediation or to transition organization for reuse, privatization, etc.</i>
4.1.1.6.3.4.1	Turnover PUREX Facilities <i>After deactivation is complete, maintains and manages the facility until transfer for beneficial use or D&D is accomplished. Performs actual transfer of facility.</i>
4.1.1.6.3.4.2	Turnover PUREX Facility Information <i>Transfers actual information on facility status and characterization to receiving organization.</i>
4.1.1.6.3.4.3	Prepare PUREX Turnover Documentation <i>Prepares appropriate documentation on the facility status and supporting information in accordance with turnover specification.</i>
4.1.1.6.4	Disposition Currently Identified PUREX Radioactive Materials Held As A Potential Product & Special Nuclear Material <i>Collects and prepares SNM/NM/NF materials for temporary storage and transfer, and transports materials out of the facility.</i>
4.1.1.6.4.1	Categorize PUREX Materials As Waste Or Special Nuclear Material/Potential Product <i>Categorizes materials as waste or Nuclear Material with potential value (e.g. cesium capsules, SNM, NF, ETC.).</i>
4.1.1.6.4.1.1	Verify PUREX Form, Characterization, Physical State & Inventory <i>Verifies form, characterization, physical state, and inventory of SNM/NM/NF materials in the PUREX facility.</i>
4.1.1.6.4.1.2	Obtain Additional PUREX Characterization Information <i>Obtains additional characterization information to support PUREX certification or SNM/NM/NF disposition decision making.</i>

[4.1.1.6] Deactivate PUREX Facility

Function	Definitions
4.1.1.6.4.1.3	Obtain PUREX Resource/Waste Decision <i>Determines if the material is a waste or a product. This may include solicitation of a decision policy from DOE.</i>
4.1.1.6.4.2	Collect PUREX SNM,NM,NF Materials <i>Accumulates materials in logical configuration to minimize facility cost and maximize subsequent disposition opportunities.</i>
4.1.1.6.4.2.1	Receive New PUREX Offsite SNM,NM,NF Materials <i>Receives incoming materials in facilities being deactivated if cost effective and it is the most logical temporary storage facility.</i>
4.1.1.6.4.2.2	Receive PUREX Materials From Deactivation Work <i>Receives material from other facilities being deactivated if designated storage is cost effective and the most logical temporary storage option.</i>
4.1.1.6.4.3	Prepare PUREX Materials For Transport & Storage <i>Stabilizes and packages reactive materials for temporary storage for transportation to an alternate company or permanent storage or for other use.</i>
4.1.1.6.4.3.1	Stabilize PUREX Reactive Materials <i>Treats material as required to meet storage, shipment, and disposition criteria.</i>
4.1.1.6.4.3.2	Package PUREX Materials <i>Packages material for temporary storage or shipment.</i>
4.1.1.6.4.3.3	Prepare PUREX Documentation <i>Prepares all documentation for storage, shipping, or alternate use.</i>
4.1.1.6.4.4	Temporarily Store PUREX SNM,NM,NF <i>Stores materials until alternate, temporary or permanent storage or beneficial use is identified.</i>
4.1.1.6.4.4.1	Provide PUREX Storage Reports <i>Prepares and maintains required storage reports.</i>
4.1.1.6.4.4.2	Maintain PUREX Compliant Storage Facility <i>Maintains facility and equipment qualifications and operating requirements for compliant storage.</i>
4.1.1.6.4.5	Transport PUREX Materials (Type 1 Facility) <i>Transports materials to alternate storage or a beneficial use.</i>

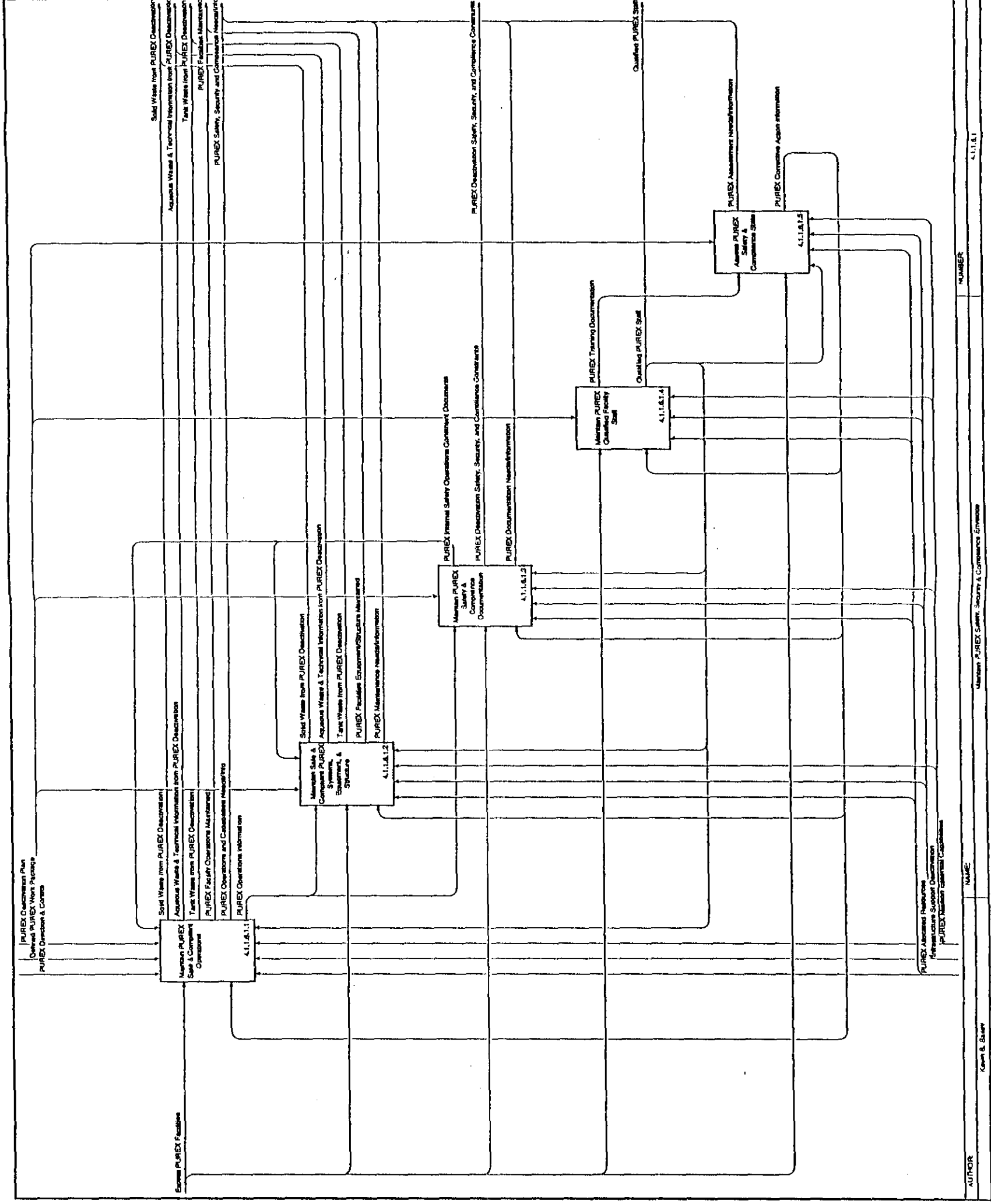
ADDENDUM 3 - IDEFO DIAGRAMS

IDEF0 Diagram
[4.1.1.6] Deactivate PUREX Facility



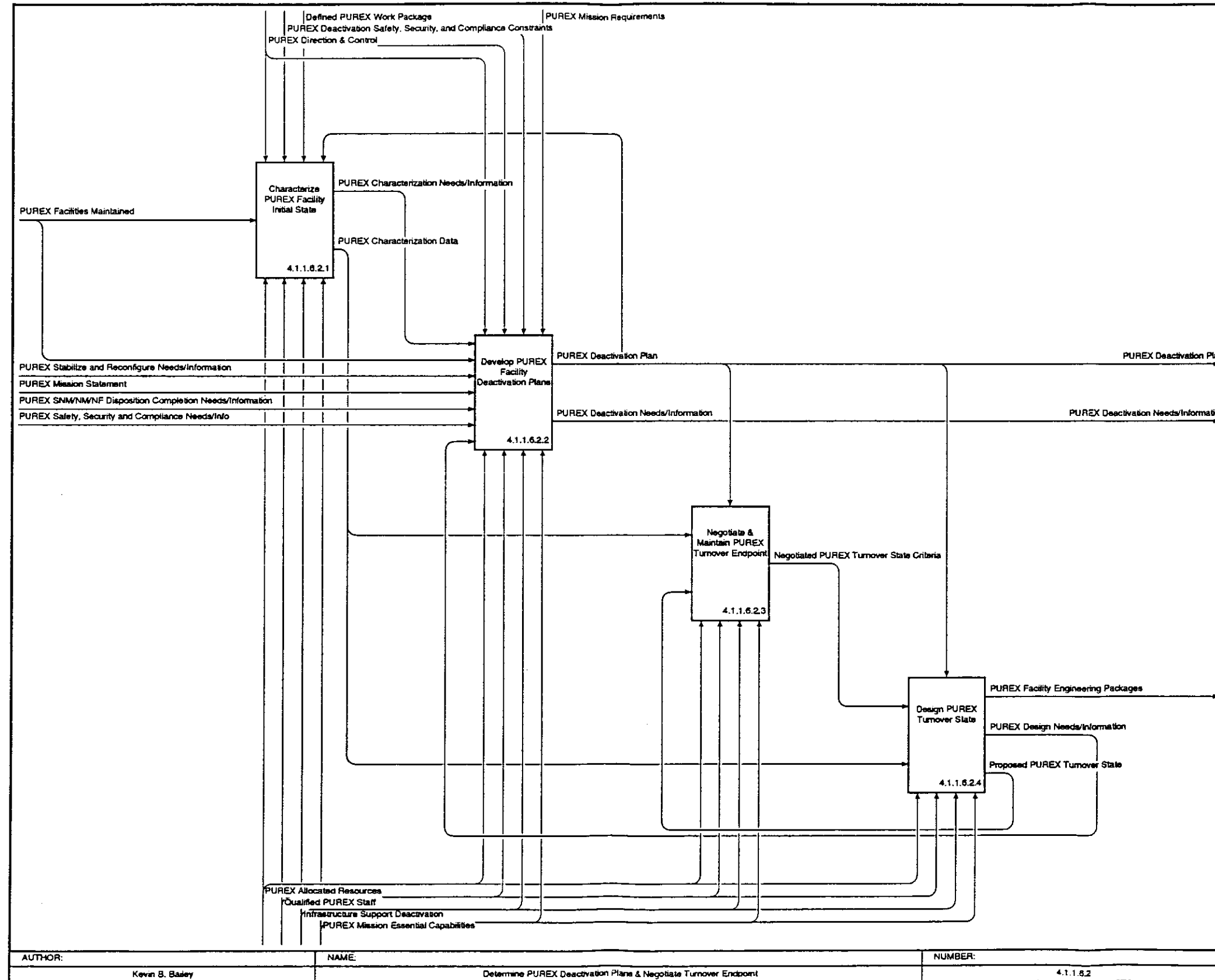
AUTHOR:	NAME:	NUMBER:
Danley, Jack C.	Deactivate PUREX Facility	4.1.1.6

IDEF0 Diagram
 [4.1.1.6.1] Maintain PUREX Safety, Security & Compliance Envelope



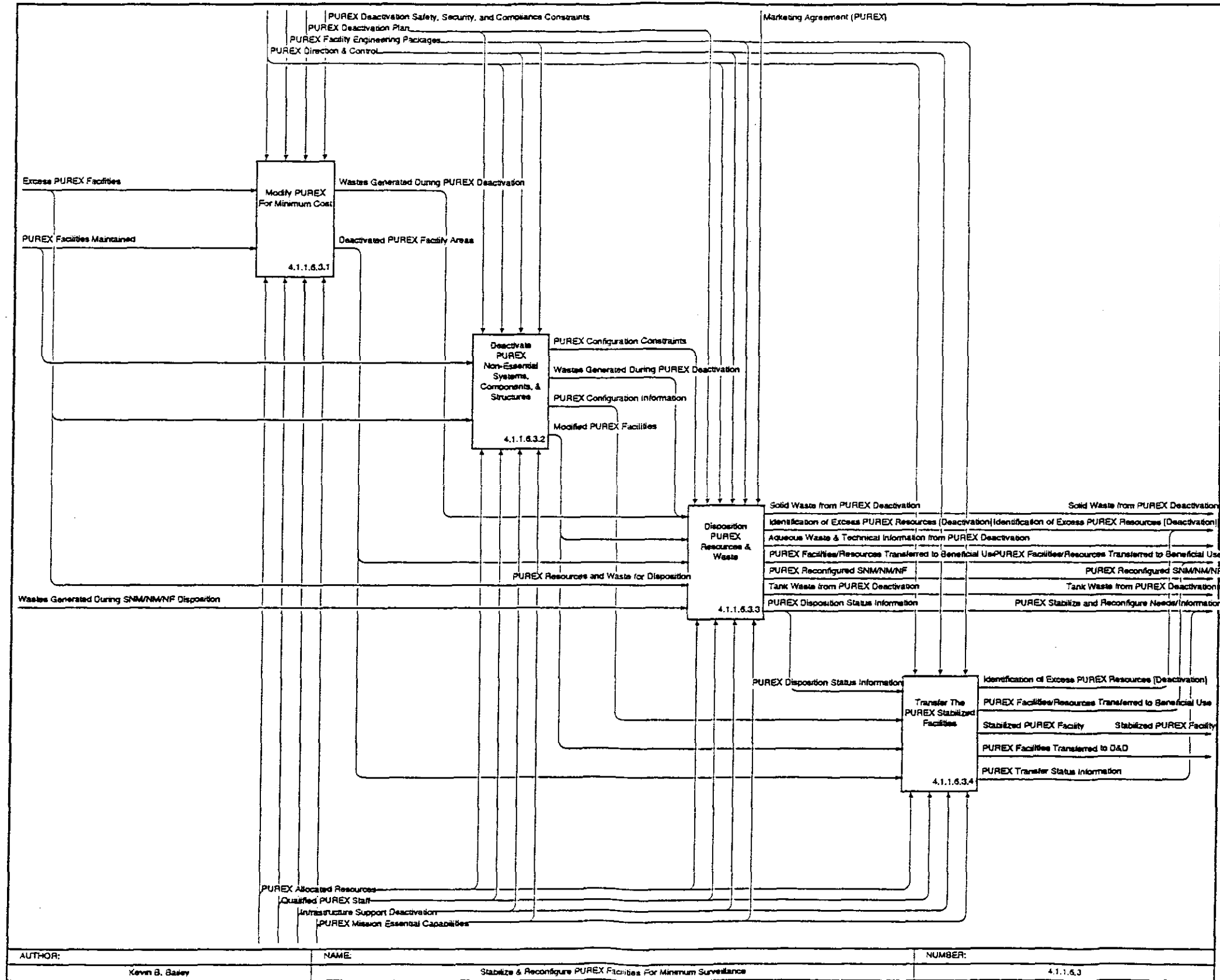
IDEF0 Diagram

[4.1.1.6.2] Determine PUREX Deactivation Plans & Negotiate Turnover Endpoint



IDEFO Diagram

[4.1.1.6.3] Stabilize & Reconfigure PUREX Facilities For Minimum Surveillance



ADDENDUM 4 - INTERFACE DEFINITIONS

[4.1.1.6] Deactivate PUREX Facility

Interface	Constituents
<p>Aqueous Waste & Technical Information from PUREX Deactivation <i>Liquid effluent resulting from deactivation of type 1 facilities.</i></p>	<ul style="list-style-type: none"> • PUREX Plant chemical sewer
<p>Deactivated PUREX Facility Areas <i>PUREX facility areas with all non-essential systems, equipment, and structures deactivated.</i></p>	
<p>Defined PUREX Work Package <i>Documentation describing the project specific work; work authorization, description, procedures, resource limits and schedules.</i></p>	
<p>Excess PUREX Facilities <i>Excess facilities containing SNM/NM/NF, and radioactive waste and hazardous waste.</i></p>	<ul style="list-style-type: none"> • PUREX Resources and Waste for Disposition
<p>Excess PUREX Facilities, Equipment & Non-Nuclear Materials <i>PUREX facilities, including all equipment and materiel associated with those facilities, that supported the Hanford production mission and are not needed to support the cleanup mission</i></p>	<ul style="list-style-type: none"> • Excess PUREX Facilities • PUREX Mission Statement
<p>Identification of Excess PUREX Resources [Deactivation] <i>Identification of excess PUREX resources consisting of excess inventory information.</i></p>	
<p>Infrastructure Support Deactivation</p>	
<p>Legacy Nuclear Materials <i>Fissile material and any other isotopes that may have resource value and that cannot be designated as waste until assessment of disposition options has been completed.</i></p>	<ul style="list-style-type: none"> • Legacy PFP Nuclear Materials • Legacy SNF • Nuclear Materials (SNM) • Nuclear Materials (SNM/NM/NF) • Reconfigured NF SNM • SNM From Facility Deactivation • SNM/NM/NF • SNM/NM/NF/SNF
<p>Marketing Agreement (PUREX) <i>Marketing Agreements consisting of identification of resources to be used in building the local economy which essentially causes transferrable items to be removed from the "disposal" list to the transfer list.</i></p>	
<p>Modified PUREX Facilities <i>PUREX facilities that have been placed into a configuration that requires minimal cost, maintenance, surveillance, and security.</i></p>	
<p>Negotiated PUREX Turnover State Criteria <i>Turnover is the point when turned over to D & D operations after negotiations are complete for dormant state. Dormant state is when we can lower cost of people and operation resources, equals turnover state in final. minimum surveillance.</i></p>	
<p>PUREX Allocated Resources <i>Financial resources authorized to the implementing organization for completion of the function</i></p>	

[4.1.1.6] Deactivate PUREX Facility

Interface	Constituents
PUREX Assessment Needs/Information <i>The information and needs for PUREX compliance assessment activities.</i>	
PUREX Categorized Information	
PUREX Categorized Materials	
PUREX Characterization Data <i>Information collected from facility walkdowns and documentation review about the actual physical configuration of the facility, status of process and other facility systems, material contents, and contamination areas and levels.</i>	
PUREX Characterization Needs/Information <i>Identification of needed characterization data regarding configuration of the PUREX facility, status of process and other facility systems, material contents, SNM/NM/NF and contamination areas and levels.</i>	
PUREX Configuration Constraints	
PUREX Configuration Information	
PUREX Corrective Action Information	
PUREX Deactivation Needs/Information	
PUREX Deactivation Plan <i>Plan containing the requirements defined in the turnover specification that must be met before D&D will accept the facility. Certain systems may need to be deactivated. Contaminated areas will need stabilization. Materials and equipment may need to be removed, ie. ER.</i>	
PUREX Deactivation Safety, Security, and Compliance Constraints <i>Constraints required to maintain the safety, security, and compliance of the PUREX facilities. Examples include HVAC system requirements, configuration, electrical system requirements/configuration, instrument requirements/configuration, material storage configuration/location, fire alarm system, etc.</i>	
PUREX Design Needs/Information	
PUREX Direction & Control <i>Project specific management guidance based on the status of implementation of the Defined Work Packages</i>	
PUREX Disposition Status Information <i>Information on the status of the disposition of PUREX resources and waste.</i>	
PUREX Documentation Needs/Information	
PUREX Facilities Equipment/Structure Maintained <i>PUREX facility equipment/structures maintained by appropriate preventive and corrective maintenance.</i>	
PUREX Facilities Maintained <i>All necessary resources for safe and compliant operation of type 1 facilities in accordance with governing safety codes and regulations.</i>	<ul style="list-style-type: none"> • PUREX Facilities Equipment/Structure Maintained • PUREX Facility Operations Maintained

[4.1.1.6] Deactivate PUREX Facility

Interface	Constituents
PUREX Facilities Transferred to D&D	
PUREX Facilities/Resources Transferred to Beneficial Use	
PUREX Facility Engineering Packages <i>Detailed procedures and work packages necessary for PUREX stabilization and reconfiguration activities.</i>	
PUREX Facility Materials for Disposition	
PUREX Facility Operations Maintained <i>PUREX facilities maintained in a safe condition by appropriate surveillance, access control, and material management.</i>	
PUREX Internal Safety Operations Constraint Documents <i>Safety analysis reports, radiological safety procedures, occupational safety codes and standards, DOE safety orders, etc.</i>	
PUREX Maintenance Needs/Information <i>Capabilities and needs discovered while operating the PUREX system; consists of staffing needs, control, facility status, required reports, staff and resource allocation.</i>	
PUREX Materials for Repackaging	
PUREX Mission Essential Capabilities <i>Mission essential capabilities in the form of all physical resources, manpower, technology, infrastructure, expertise required by all the other functions to conduct their submissions.</i>	
PUREX Mission Requirements <i>Externally- and internally-imposed product specifications and process constraints derived from all applicable laws, directives, policies, standards, agreements with stakeholders, engineering studies, safety analyses, and findings from surveillances and audits, applicable to deactivation of PUREX.</i>	
PUREX Mission Statement <i>Includes the project scope, mission statement, project objectives, and mission definition developed for the PUREX Facilities Deactivation Mission Analysis Report.</i>	
PUREX Nuclear Materials	
PUREX Operations Information	
PUREX Operations and Capabilities Needs/Info <i>Capabilities and needs discovered while operating the PUREX system.</i>	
PUREX Reconfigured SNM/NM/NF <i>SNM/NM/NF collected during PUREX stabilization and reconfiguration activities.</i>	
PUREX Resources and Waste for Disposition	
PUREX SNF to Transfer	• Forecast of SNF Receipts from PUREX
PUREX SNM/NM/NF Disposition Completion Needs/Information <i>Certification that disposition of PUREX SNM/NM/NF is complete.</i>	

[4.1.1.6] Deactivate PUREX Facility

Interface	Constituents
PUREX SNM/NM/NF Dispositioned <i>SNM/NM/NF that has been transported from the PUREX facility during deactivation activities to an on-site disposal location in order to place that facility in a deactivated state.</i>	
PUREX Safety, Security and Compliance Needs/Info	<ul style="list-style-type: none"> • PUREX Assessment Needs/Information • PUREX Documentation Needs/Information • PUREX Maintenance Needs/Information • PUREX Operations and Capabilities Needs/Info
PUREX Stabilize and Reconfigure Needs/Information	<ul style="list-style-type: none"> • PUREX Disposition Status Information • PUREX Transfer Status Information
PUREX Training Documentation <i>Documentation on PUREX deactivation staff training records, qualifications, and certifications.</i>	
PUREX Transfer Status Information	
Packaged SNM/NM/NF <i>SNM/NM/NF from PUREX deactivation prepared for storage and/or transport.</i>	
Proposed PUREX Turnover State <i>The turnover endpoint recommended by facility personnel.</i>	
Qualified PUREX Staff <i>Staff that has had the necessary training and testing to perform PUREX facility deactivation and material disposition activities in a safe and compliant manner.</i>	
Solid Waste from PUREX Deactivation <i>Solid waste materials contaminated with radioactive or hazardous materials resulting from deactivating the type 1 facility and from maintaining the facility prior to deactivation and until demolition or transfer.</i>	
Stabilized PUREX Facility <i>Type 1 facility with initial stabilization or preparation activities involving SNM/NM/NF materials and radioactive waste.</i>	
Tank Waste from PUREX Deactivation <i>Tank waste materials resulting from deactivation of type 1 facilities containing a high level of hazardous or mixed waste.</i>	
Wastes Generated During PUREX Deactivation	
Wastes Generated During SNM/NM/NF Disposition	

