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Rev. A

PRELIMINARY SCOPING-LEVEL HAZARD ANALYSIS FOR THE PROCESSING OF HGTR PEBBLE FUEL AT SRS

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TITLE: PRELIMINARY SCOPING-LEVEL HAZARD ANALYSIS FOR THE PROCESSING OF HGTR PEBBLE FUEL AT SRS

Revision Number: A

Note: Refer to Appendix C for Reviewers' Signatures for this revision.

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Date

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Date

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Date

Revision History

Revision	Affected Pages	Description of Revision
A	All	Original Issue

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ACRONYMS

A	Anticipated (in context of frequency)
ARF	Airborne Release Fraction
BEU	Beyond Extremely Unlikely
CFR	Code of Federal Regulations
CHA	Consolidated Hazards Analysis
CHAP	Consolidated Hazards Analysis Process
CW	Collocated Worker
DBA	Design Basis Accident
DID/ITS	Defense-in-Depth/Important to Safety
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EG	Evaluation Guideline
EU	Extremely Unlikely
FC	Functional Classification
FW	Facility Worker
HA	Hazard Analysis
HE	Hazard Evaluation
IC	Initial Condition
ITS	Important-to-Safety
LOC	Loss of Confinement/Containment, or Level(s) of Control
MAR	Material At Risk
MOI	Maximally exposed Offsite Individual
NC	Not Credible
NPH	Natural Phenomena Hazard
OSHA	Occupational Safety and Health Administration
RF	Respirable Fraction
SC	Safety Class
SIH	Standard Industrial Hazard
SMP	Safety Management Program
SRNS	Savannah River Nuclear Solutions
SRS	Savannah River Site
SS	Safety Significant
SSC	Structures, Systems, and Components
U	Unlikely (in context of frequency)

1.0 INTRODUCTION

The Preliminary Scoping-Level Hazards Analysis (HA) for the processing of HTGR Pebble Fuel at SRS was developed based on a graded approach consistent with the preliminary design and process input that was available. It is intended to meet the requirements for hazard analysis (HA) set forth by DOE-STD-1189-2008 (Ref. 1) for a conceptual design/process. This HA identifies hazards associated with the proposed activity, and evaluates potential hazardous events and compares the potential hazardous events to the current facility safety basis. The HA also documents potential engineering controls and design features along with their proposed functional classification which may be needed to protect the onsite workers as well as the public.

The CHAP team consisted of personnel who are recognized experts in the design, operation, and safety of H-Area, including individuals who are experienced in the following areas: Operations/Engineering, design, safety analysis, and CHAP methodology. The intent of the selection of this multidisciplinary team was to provide complete coverage of the various functional areas and to provide experienced personnel to perform a thorough analysis of the proposed activities.

2.0 PROJECT DESCRIPTION (SCOPE OF WORK)

Several options for the processing of HTGR Pebble Fuel at SRS are being developed and studied. The following general process description is the option that was analyzed for this preliminary HA. This option transfers the cask for storage and transportation of radioactive material (CASTOR) cask from storage to H Canyon, where the inner cans are removed and transferred to an unloading station. The cans are opened, and the pebbles are transferred to the digester for carbon and (where necessary) SiC removal (b)(3), (4) . Off gas from the digester is treated to remove Cs, Sr, and entrained salt.

After digestion is complete, the salt is decanted and the kernels, containing a small amount of salt, are drained into a can designed for storage or insertion in the 10-well canyon dissolver insert for dissolution. The salt is regenerated (b)(3), (4) , allowing the salt to be reused. The decant step includes filtration of the salt, with the collected solids flushed back into the digester with the salt. (Spent salt that can no longer be regenerated is drained into a can designed for immersion into a washing vessel for salt dissolution.) The filtrate, containing up to 12% of the U and residual quantities of minor actinides, is combined with the dissolver solution and blended with sufficient quantities of poisons (or depleted uranium) to meet liquid waste acceptance criteria. The down blended solution is neutralized and transferred to the waste tanks, using existing waste transfer infrastructure, for processing into high level waste (HLW) glass and saltstone.

Process areas utilized to support this option include the Hot Shop or Swimming Pool (section 3H, 4H) for can opening and fuel unloading, and a major portion of at least one process cell (5H) for carbon digestion equipment and another process for the off-gas system. Existing canyon equipment (dissolvers, waste evaporators) will be used for kernel processing. Kernel processing could be concurrent with kernel recovery, or deferred to a separate campaign by providing interim storage (in a canyon cell) for the separated kernels.

The purpose of this preliminary HA is to evaluate the potential bounding radiological consequences associated with the processing of HTGR Pebble Fuel at SRS and potential impacts to the current H-Canyon Safety Basis. As the studies and design are further developed for the proposed activity additional HAs will be conducted.

3.0 INPUTS AND ASSUMPTIONS

3.1 It is assumed that the radiological inventories associated with the HGTR Pebble Fuel are bounded by the current H-Canyon DSA inventories.

3.2 It is assumed that the CASTOR casks will remain intact under a wide range of normal and abnormal staging and handling conditions such as fires, drops, and impacts. It is also assumed the casks would survive NPH events.

4.0 OPEN ITEMS

The following open items are unresolved potential issues, inputs, assumptions or analyses that can significantly affect the results of the HA.

4.1 The design for processing the HTGR Pebble Fuel at SRS is in the conceptual design / study phase and is not finalized at the time of this HA. The results derived in this HA will need to be reviewed and may be revised as the process/design progresses.

5.0 HAZARD ANALYSIS

The primary purpose of this HA is to evaluate the risks involved with processing the HTGR Pebble Fuel at SRS and compare these risks to the current H-Canyon safety basis. This was done by determining the hazardous event scenarios for each process activity and the associated MAR for each of these scenarios. The HA review consisted of hazard identification and hazard evaluation. The results of the assessment were used to analyze the potential necessity of various design features and controls as well as to determine their potential functional classification.

5.1 HAZARD IDENTIFICATION

FIRE

The handling and process areas are subject to potential fire events but do not present any new or unique fire hazards that have not already been identified and evaluated by the existing DSA. (Ref. 5)

EXPLOSIONS

The preliminary hazard analysis of processing of HTGR Pebble Fuel in H-Canyon did identify a potential for an uncontrolled chemical reaction that could result in a rapid over-pressurization of a process vessel. It is expected that the new process is designed to prevent process upsets that could lead to process explosions. In the event of postulated explosions the current H-Canyon structure and exhaust system are adequate to mitigate consequences. H-Canyon has existing analysis for hydrogen deflagration, TBP-nitric acid runaway reactor (red oil explosion) and ammonium nitrate explosions.

LOSS OF CONFINEMENT

The handling and process areas are subject to potential LOC events (spills, drops, impacts) but do not present any new or unique LOC hazards that have not already been identified and evaluated by the existing DSA. (Ref. 5)

RADIOLOGICAL

The HTGR Pebble Fuel analyzed in this HA presents a radiological and exposure hazard for the facility.

CHEMICAL

No chemicals for the proposed activity were identified that exceed the chemical screening criteria. Therefore, no hazardous chemicals are present in sufficient quantities to warrant further analysis at this point in development of the process.

CRITICALITY

Evaluation of criticality hazards were not within the scope of the preliminary HA.

EXTERNAL EVENTS

Handling and processing the HTGR Pebble Fuel in H-Canyon does not present any new or unique external hazards that have not already been identified and evaluated by the existing DSA. (Ref. 5)

NATURAL PHENOMENA

Earthquakes are identified as an NPH hazards for the proposed activity. Other types of NPH events do not present any new or unique hazards that have not already been identified and evaluated by the existing DSA. (Ref. 5)

5.2 HAZARD EVALUATION

The team examined the hazards associated with handling and processing the HTGR Pebble Fuel in H-Canyon to postulate hazards event scenarios. The Hazard Evaluation (HE) documents the hazards of the proposed activity and identifies bounding unmitigated accident scenarios. Unmitigated doses to the Occupationally Exposed Person (OEP) at 100 meters, and Maximally Exposed Offsite Individual (MOI) were estimated using existing engineering calculations provided in the H-Canyon DSA (Ref. ??). During the unmitigated HE, the MAR equaled the available hazardous inventory that could be acted upon during the postulated event and did not take credit for preventive or mitigative controls. Preventive and Mitigative Controls were then identified to form a potential control strategy for the preliminary hazardous events. The primary purpose of this HE was to identify bounding or unique hazardous events and identify potential controls which could help define the design input criteria of the project and/or the H-Canyon DSA (Ref. ??). The HE is documented in the Preliminary Scoping-Level Hazard Evaluation Table in Appendix B.

5.3 Results of the Hazard Evaluation

The results of this HE are preliminary because the processing of the HTGR Pebble Fuel in H-Canyon is still in the study/conceptual design phase. For each accident type, a conservative evaluation of the consequence was made based on the preliminary accident information provided by the early process studies and conceptual design for the handling and processing of the HTGR Pebble Fuel in H-Canyon. Where the consequences could be significant, the event scenario was identified as bounding and listed in Appendix B. The HA team then looked at the bounding events for each event type in the current H-Canyon DSA (Appendix A) and compared these events to possible bounding events postulated (Appendix B). Possible control strategies were identified and compared to the existing H-Canyon DSA control strategies to identify impacts, if any, to the current facility safety basis. The potential impacts are documented in the comment section of Appendix B.

6.0 REFERENCES

1. "Consolidated Hazards Analysis Process (CHAP) Program & Methods Manual", SCD-11, Rev. 7, Savannah River Site, Aiken, SC, August 2009.

2. "Functional Classification," Conduct of Engineering and Technical Support, WSRC Procedure Manual E7, Procedure 2.25, Rev. 16, Washington Savannah River Company, Aiken, SC, April 2008.

3. Integration of Safety into the Design Process, DOE STD-1189-2008, U.S. Department of Energy, Washington, DC, March 2008.

4. Staniszewski, I., "Study for additional fuel storage racks in L Basin", C-ESR-L-00004, Rev. 0, Savannah River Site, Aiken, SC, August 2009.

5. "L-Area Material Storage Facility", WSRC-SA-2004-00002, Rev. 3 CN-1, Savannah River Site, Aiken, SC, March 2009

6. "Hazardous Material Inventory Control" Procedure SFP 14.01, Rev. 3, Spent Fuel Programs Administrative Manual (U). WSRC Procedure Manual SFP-1, Westinghouse Savannah River Company, Aiken, SC.

7. Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports. DOE-STD-1027-92, Change Notice No. 1, U.S. Department of Energy, Washington, DC, September 1997.

APPENDIX A

BOUNDING EVENTS FROM CURRENT H-CANYON DSA

Event Number	Event Title	Unmitigated (rem)		Mitigated (rem)		Credited Controls	
		CW	Offsite	CW	Offsite	Preventers	Mitigators
FIRE EVENTS							
FR-1-002	A fire spreads to the cask car (lid not secured) while transporting or storing fuel	4.30E+03	2.00E+00	<100	2.00E-01	Fire Protection Program AC Railroad Tunnel combustible control SAC	Cask DF Emergency Response Program AC
FR-1-002a	A fire spreads to the cask car (lid secured) while transporting or storing fuel	4.30E+03	2.00E+00	Prevented		Fire Protection Program AC Railroad Tunnel combustible control SAC Cask DF	Emergency Response Program AC
FR-1-003	A fire spreads to SNM containers during handling or storage (awaiting charging to dissolver)	1.10E+04	4.50E+00	4.50E+00	1.30E-01	Fire Protection Program AC	H-Canyon Structure DF H-Canyon Ventilation System LCO Emergency Response Program AC
FR-1-005	An external fire spreads to plutonium receipt container during handling and storage (loading dock)	4.60E+04	1.90E+01	Prevented		Type B Shipping Package DF Loading Dock combustible control SAC	
LSR-1-001	External fire spreads to a radioactive liquid tanker	Not analyzed (MOI EG not challenged)					Emergency Response Program AC
SX-1-001	Fire resulting from spill of overheated organic or solvent material (13H)	1.04E+04	4.30E+00	4.26E+00	1.10E-01	Solvent stream high-temperature steam interlocks LCO n-paraffin flashpoint SAC	H-Canyon Structure DF H-Canyon Ventilation System LCO Emergency Response Program AC
EXPLOSION EVENTS							
DS-2-001	Hydrogen deflagration in a dissolver from chemical generation	Not analyzed (MOI EG not challenged)				Dissolver low sparge / purge air steam flow interlock LCO	H-Canyon Structure DF H-Canyon Ventilation System LCO Dissolver charging hatch not weighted or fastened SAC
HAW-2-001a	Hydrogen deflagration in a vessel from radiolytic generation	1.40E+04	6.30E+00	7.00E+00	2.20E-01	Vessel air purge system LCO	H-Canyon Structure DF H-Canyon Ventilation System LCO

HAW-2-003	TBP nitric acid runaway reaction in evaporator	4.60E+04	2.00E+01	Prevented		Evaporator passive vent areas (evaporator column vent lines) DF Evaporator high coil-pressure and high pot-temperature steam-flow interlock system LCO Box and tank decanter DF Mixer-settler DF TBP Accumulation Program AC	
HAW-2-003a	TBP nitric acid runaway reaction in neutralization tank	4.60E+04	2.00E+01	Prevented		Vessel passive vent areas (overflow lines and PVV lines) DF Box and tank decanter DF Steam stripping of organic SAC TBP Accumulation Program AC	
HAW-2-004a	Deflagration of organic vapor from solvent in the neutralization tank	3.30E+03	1.40E+00	1.30E+00	4.10E-02	Box and tank decanter DF Steam stripping of organic SAC n-paraffin flashpoint SAC	H-Canyon Structure DF H-Canyon Ventilation System LCO
HAW-2-004b	Deflagration of organic vapor from solvent in a vessel or decanter receiving heated streams from mixer settler banks	3.30E+03	1.40E+00	1.30E+00	4.10E-02	Mixer-Settler high-temp steam interlock LCO n-paraffin flashpoint SAC	H-Canyon Structure DF H-Canyon Ventilation System LCO
HAW-2-005	High ammonium concentration in waste solution, when neutralized, results in high ammonia generation which in the presence of an ignition source causes a deflagration	3.00E+03	1.30E+00	1.20E+00	2.80E-02	Ammonium concentration maximum value SAC	H-Canyon Structure DF H-Canyon Ventilation System LCO
HD-2-007a	Organic vapor buildup from solvent in strike tank with subsequent deflagration	Not analyzed (MOI EG not challenged)				Head-end strike-tank high-temperature steam interlock LCO n-paraffin flashpoint SAC	H-Canyon Structure DF H-Canyon Ventilation System LCO

HD-2-002a	TBP nitric acid runaway reaction in strike tank	4.60E+04	2.00E+01	Prevented		Vessel passive vent areas (overflow lines and PVV lines) DF Head-end strike-tank high-temperature steam interlock LCO	
SH-2-001a	TBP nitric acid runaway reaction in evaporator	5.00E+04	2.10E+01	Prevented		Evaporator passive vent areas (evaporator column vent lines) DF Evaporator high coil-pressure and high pot-temperature steam-flow interlock system LCO Box and tank decanter DF TBP Accumulation Program AC	
VNT-2-001	Explosion of ammonium nitrate on PVV filter	3.40E+05	1.40E+02	Prevented		Filter flushing SAC Controls that prevent red oil explosions and fires	
LSR-2-001	Hydrogen deflagration in a tanker from radiolytic generation	Not analyzed (MOI EG not challenged)				Periodic venting of tanker head space SAC	Emergency Response Program AC
LOSS OF CONFINEMENT EVENTS							
HAW-3-002	Leak from a vessel	Not analyzed (MOI EG not challenged)				Canyon vessel DF	H-Canyon Structure DF H-Canyon Ventilation System LCO
HAW-3-002a	Leak from a jumper	7.80E+03	3.00E+00	2.70E+00	8.90E-02	Jumper DF	H-Canyon Structure DF H-Canyon Ventilation System LCO
HAW-3-003	Material transfer error to a vessel results in an overflow	Not analyzed (MOI EG not challenged)					H-Canyon Structure DF H-Canyon Ventilation System LCO Transfer Protocol Program AC
HAW-3-004	Inadvertent jumper configuration results in a material transfer error	7.80E+03	3.00E+00	2.70E+00	8.90E-02	Jumper Control Program AC	H-Canyon Structure DF H-Canyon Ventilation System LCO
FR-3-003	HB-Line material transport container or bundle drops and spills (crane failure)	Not analyzed (MOI EG not challenged)				Hoisting, Rigging and Scaffolding Program AC CPO Training and Qualification Program AC	H-Canyon Structure DF H-Canyon Ventilation System LCO

FR-3-003a	HB-Line material transport container or bundle drops and spills (bundle failure)	Not analyzed (MOI EG not challenged)			Charging bundle retaining device verification SAC	H-Canyon Structure DF H-Canyon Ventilation System LCO
HAW-3-006	Material transfer error to CCW return system	5.80E+04	2.40E+01	Prevented	Unused out lines blanks or blank equivalents DF CCW monitor system LCO Delay basin DF Jumper Control Program AC	Emergency Response Program AC Transfer Protocol Program AC
DS-3-007-1	Cooling coil failure with release to the CCW system	Not analyzed (MOI EG not challenged)			CCW monitor system LCO Delay basin DF Vessel cooling coil DF	Emergency Response Program AC
HAW-3-011a	Spill or leak from canyon waste header due to a leaking transfer pipe during transfer to high level waste	Not analyzed (MOI EG not challenged)				H Canyon waste header encasement DF Concrete mummy casing DF Emergency Response Program AC
PU-3-012	Leak from a jacketed transfer line between H-Canyon and HB-line during transfer or receipt results in spill in H-Canyon	Not analyzed (MOI EG not challenged)			Transfer pipe DF Piping secondary containment DF	Emergency Response Program AC Radiation Protection Program AC
EXPOSURE EVENTS						
CO-4-001	Direct internal exposure to radioactive material resulting from a puncture wound during sampling in the sample aisle	Not analyzed (MOI EG not challenged)			Verification of shroud or doorstop SAC Radiation Protection Program AC	Emergency Response Program AC
FR-4-001	Inadvertent personnel radiation exposure while unloading irradiated fuel in the railroad tunnel	Not analyzed (MOI EG not challenged)			H-Canyon Structure DF Radiation Protection Program AC Verfication of shielding door and permissive switch SAC	Radiation Protection Program AC
DS-4-011	Gang valve suck back results in elevated radiation in the gang valve corridor	Not analyzed (MOI EG not challenged)				Radiation Protection Program AC
EXTERNAL EVENTS						
CO-6-001	Vehicle impact with subsequent fire damages radioactive sample or source shipping container resulting in release of radiological material	Not analyzed (MOI EG not challenged)			Radioactive Material Shipping and Receiving Program AC	

FR-6-001a	External impact from a runaway locomotive results in a cask breach, fuel bundle damage, and subsequent fire	Not analyzed (MOI EG not challenged)				Derailer installation and verification SAC Train Crew Training AC	Emergency Response Program AC
FR-6-008a	Vehicle impact between a fuel truck and a plutonium oxide transport vehicle with breach of a plutonium oxide container and subsequent fire	4.60E+04	1.90E+01	Prevented		Type B Shipping Package DF	
HAW-6-001	Crane load drop damages vessels or equipment resulting in a release of process material	7.80E+03	3.00E+00	2.70E+00	8.90E-02	Hoisting, Rigging and Scaffolding Program AC CPO Training and Qualification Program AC Transfer Protocol Program AC	H-Canyon Structure DF H-Canyon Ventilation System LCO
HAW-6-002	Spill or leak from canyon waste header due to transfer piping damage from an external source during transfer to high level waste	Not analyzed (MOI EG not challenged)				H Canyon waste header encasement DF Concrete mummy casing DF	Emergency Response Program AC
LSR-6-001a	External impact to a radioactive-liquid-transport tanker results in a release of radioactive material and a subsequent fire	Not analyzed (MOI EG not challenged)				Traffic Control Program AC	Emergency Response Program AC
NPH EVENTS							
GE-7-003	Seismic event causes a loss of purge which results in a buildup of hydrogen and subsequent hydrogen deflagration with expulsion of material	5.90E+03	2.50E+00	2.50E+00	6.10E-02		H-Canyon Structure DF H-Canyon Ventilation System LCO CSEX HEPA Filter LCO Emergency Response Program AC Fire Protection Program AC Air sparge piping DF and seismic sparge reponse SAC

GE-7-004	A seismic event results in damage to H-Canyon and all associated systems and vessels, with loss of contents	4.00E+04	1.60E+01	1.56E+01	4.10E-01		H-Canyon Structure DF H-Canyon Ventilation System LCO CSEX HEPA Filter LCO Emergency Response Program AC Fire Protection Program AC Seismically qualified process vessels DF
GE-7-005	A seismic event results in damage to H-Canyon with loss of containment followed by fires that occur in the Hot Crane Maintenance Area, Truck Well, and Railroad Tunnel with releases	4.00E+04	1.60E+01	1.56E+01	4.10E-01		H-Canyon Structure DF H-Canyon Ventilation System LCO CSEX HEPA Filter LCO Emergency Response Program AC Fire Protection Program AC

Notes: TRU waste SACs not listed, since mission is completed and TSR controls to be removed during next revision.

Red indicates SC

APPENDIX B

PRELIMINARY SCOPING-LEVEL HAZARD EVALUATION FOR PROCESSING OF HTGR PEBBLE FUEL AT SRS

Event Number	Description	MAR	Unmitigated Risk	Potential Controls	Comments
Fire Events					
HTGR-1-001	Fire propagates throughout the HTGR Process Area	3 salt logs (fission products from about 10 runs) 2 kernel cans U 1 kg U in each digestion vessel About 3 kgs U in dissolver		Fire Protection Program / combustible control Robust H-Canyon Structure Active Canyon Exhaust Ventilation System	It is expected that the existing fire control strategy credited in the H-Canyon DSA would be sufficient to protect site workers as well as the public.
HTGR-1-002	Fire propagates throughout the Truckwell during Cask Handling			Shipping Package DF (CASTOR cask)	See assumption 2.
Notes: No unique fire hazards were identified that were worse than already identified in the H-Canyon DSA. Given the preliminary nature of the design of the proposed activity it is not possible to perform a detailed HA and some changes to the control strategy may be required; however, it is assumed that the systems would be designed to prevent or mitigate these conditions.					
Explosion Events					
HTGR-2-001	Auto catalytic reaction results in a rapid over-pressurization of the process vessel			Robust H-Canyon Structure and new process designs to prevent explosions Active Canyon Exhaust Ventilation System	It is expected that the new process is designed to prevent process upsets that could lead to process explosions. In the event of postulated explosions the current H-Canyon structure and exhaust system are adequate to mitigate consequences.
Notes: No explosive gasses identified at this pre-conceptual design phase. No unique explosion hazards were identified that were worse than already identified in					

the H-Canyon DSA. Given the preliminary nature of the design of the proposed activity it is not possible to perform a detailed HA and some changes to the control strategy may be required; however, it is assumed that the systems would be designed to prevent or mitigate these conditions.					
Loss of Confinement Events					
HTGR-3-001	Leak of Process Vessel			Robust H-Canyon Structure Active Canyon Exhaust Ventilation System	It is expected that the new process is designed to prevent process upsets that could lead to process leaks. In the event of postulated leak or spill the current H-Canyon structure and exhaust system are adequate to mitigate consequences.
HTGR-3-002	Inadvertent drop, spill, or impact to product containers result in release of material			Robust H-Canyon Structure Active Canyon Exhaust Ventilation System	It is expected that the new process is designed to prevent process upsets that could lead to process leaks. In the event of postulated leak or spill the current H-Canyon structure and exhaust system are adequate to mitigate consequences.
Notes: No unique LOC hazards were identified that were worse than already identified in the H-Canyon DSA. Given the preliminary nature of the design of the proposed activity it is not possible to perform a detailed HA and some changes to the control strategy may be required; however, it is assumed that the systems would be designed to prevent or mitigate these conditions.					
Exposure Events					
HTGR-4-001	Excessive personnel exposure due to inadequate material handling			Robust H-Canyon Structure and designs for remote operations	Current control strategy is adequate and no impacts to safety basis identified.
Notes:					
External Events					
HTGR -	Vehicle impact between a fuel truck and a cask transport vehicle with			Shipping Package DF (CASTOR	See assumption 2.

6-001	breach of container and subsequent fire			cask)	
HTGR-6-002	Aircraft impact into H-Canyon			Robust H-Canyon Structure	Current control strategy is adequate and no impacts to safety basis identified.
Notes:					
NPH Events					
HTGR-7-001	Seismic event with subsequent fire			Shipping Package DF (CASTOR cask) Robust H-Canyon Structure Active Canyon Exhaust Ventilation System	Current control strategy is adequate and no impacts to safety basis identified.
HTGR-7-002	Tornado/High Wind Event			Shipping Package DF (CASTOR cask) Robust H-Canyon Structure	Current control strategy is adequate and no impacts to safety basis identified.
Notes:					

APPENDIX C

REVIEW SIGNATURES

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