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Upper and Lower Section C
To be excavated in Campaign Excavation 3

Upper Section D
To be excavated in Campaign Excavation 4

Lower Section D
Emplacement Room Excavation

Upper Section B
Emplacement Room Excavation

Upper and Lower Section A
Container Emplacement

Lower Section B
Emplaced Containers

Note: Airflow direction demonstrates non-mixing of excavation and emplacement air.

FIGURE 9 - PHASE 2 EXCAVATION AND UFC EMLACEMENT SEQUENCE
Figure 10 - Phase 3 Excavation and UFC Emplacement Sequence

Note: Airflow direction demonstrates non-mixing of excavation and emplacement air.
Note: Airflow direction demonstrates non-mixing of excavation and emplacement air.

FIGURE 11 - PHASE 4 EXCAVATION AND UFC EMPLACEMENT SEQUENCE
FIGURE 12  TYPICAL MOVEMENT OF TRAFFIC DURING EMPLACEMENT AND EXCAVATION OPERATIONS
FIGURE 13 - VENTILATION SCHEMATIC FOR THE DEEP GEOLOGIC REPOSITORY
FIGURE 15 DETAIL OF THE UPCAST SHAFT COMPLEX
NOTE:
- LAYOUT MAY BE MIRRORED DEPENDING ON WHETHER AN UPPER OR LOWER EMBLEACEMENT PANEL IS BEING DEVELOPED.

FIGURE 16 CROSS SECTION OF ACCESS TUNNELS
FIGURE 17  LOCATION OF 12m THICK
EMPLACEMENT ROOM BULKHEADS
1. ADVANCE LOADED UFC TRANSPORT CASK TO GAMMA GATE AND DOCK. OPEN GAMMA GATES AND INSERT JACKETED UFC ONTO TRANSFER TABLE CLOSE GAMMA GATES AND REMOVE UFC TRANSPORT CASK.

INSERTION CART
TRANSFER TABLE

2. ADVANCE LOADED BUFFER BLOCK TRANSPORT CASK TO GAMMA GATE AND DOCK. OPEN GAMMA GATES AND INSERT BLOCKS ONTO TRANSFER TABLE CLOSE GAMMA GATES AND REMOVE BLOCK TRANSPORT CASK.

BUFFER BLOCK

3. TRANSFER JACKETED UFC AND BUFFER BLOCKS ONTO INSERTION CART

4. INSERT JACKETED UFC AND BUFFER BLOCKS INTO PRE-BUILT EMPLACEMENT STRUCTURE.

PRE-BUILT EMPLACEMENT STRUCTURE

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FIGURE 24  IRRADIATED FUEL TRANSPORT CASK (IFTC) SHOWING SHIPPING MODULE AND USED FUEL BUNDLE
FIGURE 25    USED FUEL BASKET

60 FUEL BUNDLES
PER FUEL BASKET

FUEL BASKET DIMENSIONS:-
OUTSIDE DIAMETER = 1070mm
HEIGHT = 560mm

FUEL BASKET WEIGHTS:-
EMPTY = 450Kg
FULLY LOADED = 1942Kg
(60 FUEL BUNDLES)
FIGURE 26  GENERAL ARRANGEMENT OF PROPOSED DRY STORAGE BASKET TRANSPORT CASK
FIGURE 28  FUEL HANDLING CELL
FUEL BUNDLE TRANSFER ARRANGEMENT
1. ADVANCE THE UFC BASKET RAIL CAR WITH EMPTY UFC BASKET INTO THE FUEL BUNDLE TRANSFER MACHINE. ADVANCE THE SEALED STORAGE BASKET (SSB) RAIL CAR WITH LOADED BASKET TO THE BASKET CUTTING AREA. CUT THE BASKET IN THE APPROPRIATE PLACES, REMOVE THE TOP BASKET SECTION AND DISCHARGE TO THE WASTE MANAGEMENT FACILITY. ADVANCE THE SSB RAIL CAR INTO THE FUEL BUNDLE TRANSFER MACHINE.

2. WITH THE UFC BASKET IN POSITION RAISE FUEL BUNDLE SUPPORT RODS. TRANSFER FUEL BUNDLES AND FILL UFC BASKET BOTTOM LAYER. LOWER SUPPORT RODS AND TRANSFER TOP LAYER OF FUEL BUNDLES INTO UFC BASKET.

3. REMOVE THE FILLED UFC BASKET RAIL CAR AND SSB RAIL CAR FROM THE FUEL BUNDLE TRANSFER MACHINE. ADVANCE THE UFC BASKET RAIL CAR TO THE FUEL BASKET HANDLING CELL. REMOVE THE EMPTIED SEALED STORAGE BASKET AND DISCHARGE TO THE WASTE MANAGEMENT FACILITY. RETURN THE SSB RAIL CAR TO THE BASKET RECEIPT CELL.

FIGURE 29  SEQUENCE DIAGRAM FOR STORAGE BASKET FUEL BUNDLE TRANSFER
FIGURE 30  GENERAL ARRANGEMENT OF UFC ELEVATING CART
1. Insert jacket clamp and appropriate bentonite jacket into the tilting frames.

2. Raise tilting frames to the vertical position, lower the UFC between the jackets and traverse into the top jacket.

3. Close the tilting frames and lower the bentonite end plug to complete the jacket.

4. Open the tilting frames.

5. Lower the tilting frames to the horizontal position remove the bentonite jacket clamp and open the hinged roller bed.

6. Advance the jacketed UFC into UFC transport cask. Place the bentonite clamp into the top jacket tilting frame.

FIGURE 31 GENERAL ARRANGEMENT OF UFC JACKETING MACHINE
FIGURE 33  UFPP ZONING AND ROOM NUMBERS SHEET 2 OF 2
FIGURE 35  BLOCK COMPACTION MACHINE
FIGURE 36 RECOVERY EQUIPMENT FOR REMOVAL OF LOWER SEALING MATERIALS
FIGURE 37 RECOVERY EQUIPMENT FOR REMOVAL OF UPPER SEALING MATERIALS
FIGURE 38 RECOVERY EQUIPMENT FOR REMOVAL OF UFC
FIGURE 39 – SUMMARY DGR SCHEDULE
Initial Exploration Development
Developing a Test Component Area and determining the proper Repository orientation.

Repository Development
Establishing the perimeter, central and repository panel access drifts, plus the waste fuel transport repair facility and exhaust ventilation shaft.

Repository Development - Repository Panel Development
Establish the Waste Shaft, empty and loaded rail car areas and 39 emplacement rooms.

FIGURE 40 DGR DEVELOPMENT STAGES