PROPOSED SEQUENCE FOR THE FULL SCALE EXERCISE - SEP 21, 1999:

Time	Event/Action		
(min)			
0000	 A controller initiates the exercise by tipping over a poly pac cart, starting the smoke generator and opening the valve to the flange prop. A poly pac will be on the floor with the contents spilled. Primary Card #1 (PC#1) will be used if area personnel are confused. Note: the reaction of 63% nitric acid and UO₂ powder generates NO_x gases. The Emergency Coordinator is notified of the situation. An operator tries to close the manifold valve on the wall of line 5. A controller hands PC #7 to the operator indicating the valve has failed open. The Emergency Coordinator activates the Emergency Response Organization and assumes or assigns Emergency Director responsibilities. The Emergency Coordinator evaluates the situation and instructs the main station guard to use the Voice Communication System to evacuate the area. During the evacuation an operator is overcome by the fumes and is rendered unconscious near the scene. Brigade, HP Response, Medical and Security Teams are activated, report to appropriate assembly points and await instructions. Section supervisors account for their personnel and report to the Emergency Coordinator. The Emergency Coordinator is notified that one person cannot be accounted for. 		
0015	 10. Off duty command staff is notified of the emergency. 11. Nitric acid flow is stopped when the pump is shut down. 12. The entry team enters and finds the victim. PC #4 is handed to the responder indicating that the employee is unconscious and in respiratory distress. 13. The Emergency Coordinator dispatches an HP Technician to the roof to take the appropriate samples. A smoke bomb is used to simulate NO_x fumes escaping the building. 14. The incident is classified as Local, Alert or Site Area Emergency. 15. Proper outside agencies are notified. 16. The victim is removed from the hot zone and taken to decon. 17. On site Emergency Medical Service is notified of a casualty. 18. The spill is confined. 		
0030	 19. Decon team puts the casualty on oxygen and performs decontamination. A controller hands PC #6 to the HP Responder attached to the Decon team. 20. On site Emergency Medical Services contacts the Emergency Coordinator and requests off site assistance - the patient's condition does not improve (PC #17 is issued). 		

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Time (min)	Event/Action	
	21. The Emergency Coordinator or his appointee calls 911 and requests off site EMS for a contaminated victim.	
	22. The results of the stack sample (PC #10) is communicated to the Emergency Coordinator - minor release of radioactive materials.	
	23. The Emergency Coordinator sends responders downwind with Drager tubes to determine NO _x concentrations.	
	24. The Emergency Coordinator establishes a staging area for off site Emergency Medical Service response.	
	25. HP Response Team takes impact samples near the area of the spill.26. HP Response Team samples the area surrounding the building.	
0045	27. Drager tubes results are communicated to the Emergency Coordinator (PC #16).	
	28. Entry team is deconned and checked for contamination.	
	30. Decon team is deconned and checked for contamination.	
	31. Decon team vitals are taken.	
	32. HP samples are analyzed and results evaluated (PC # 11 through PC #15).	
	33. The casualty is transported to Richland Memorial Hospital.	
	34. Command staff decides on the proper method to clean up the spill.	
0060	 35. When objectives of the exercise have been met the Exercise Controller will give PC # 17 to the Emergency Coordinator and terminate the exercise. 	

Emergency Exercise Controllers

Assignment

Name

Exercise

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Carlos Aguilar Spencer Gantt

Garry Bullock Ralph Jacobs

Brigade

Jeff Hooper

Assembly Point

Emergency Coordinator

Health Physics

Dick Pregnall

Ed Reitler Tommy Shannon

Security/Medical

Phil Stroud

DRAFT CHECKLIST:

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Step	Action	Time/Comments
1.	Operator tips over cart. Smoke plume is initiated (if no smoke PC #1 handed out).	
2.	EC is notified of the incident.	
3.	Operator tries to close manifold valve. PC#7 is handed out indicating valve fails OPEN.	
4.	EC activates the ERO and assumes or assigns ED responsibilities. An area evacuation is called.	
5.	Operator is overcome by fumes and is unconscious at the scene. This occurs during the evacuation.	
6.	Accountability is achieved.	
7.	Operator is sent to shut off upstream valve. Smoke bomb is used on the roof to simulate fumes escaping the building.	
8.	ERO functions are assigned.	
9.	Flow is stopped.	
10.	Entry team enters and retrieves victim. (Verify proper level of PPE is used.)	
11.	Spill confined.	
12.	Responders sent downwind to determine nitrogen dioxide levels.	
13.	On site EMS notified and off site EMS requested	
14.	Victim checked for contamination (chemical and radiological).	

15.	Staging area established to receive off site EMS.	
16.	Victim on oxygen and transported.	
17.	Entry team deconned.	
18.	Richland Memorial Hospital uses proper protocol receiving the victim.	
19.	Plans established for clean up and verification of clean up.	

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THE FOLLOWING IS A LIST OF ITEMS WOULD BE CONSIDERED A WEAKNESS:

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- FAILURE OF THE EC TO ASSEMBLE THE EMERGENCY RESPONSE ORGANIZATION.
- FAILURE OF THE EC TO ESTABLISH COMMUNICATIONS.
- FAILURE OF THE EC TO HAVE SECURITY MAKE AN ANNOUNCEMENT OF THE EVENT.
- FAILURE OF THE EC TO RESPOND TO THE POWDER AND/OR NITRIC ACID SPILL.
- FAILURE OF THE EC TO ORGANIZE THE EMERGENCY BRIGADE.
- FAILURE OF THE EC TO ESTABLISH A PLAN OF ATTACK FOR THE EMERGENCY BRIGADE.
- FAILURE OF THE EC TO ESTABLISH TRAFFIC CONTROL.
- FAILURE OF THE EC TO RESPOND TO THE INJURED PERSON.
- FAILURE OF THE EC TO EVACUATE THE APPLICABLE PORTIONS OF THE CHEMICAL AREA.
- FAILURE OF THE EC TO PROPERLY CLASSIFY THE EVENT AS AN ALERT EMERGENCY.
- FAILURE OF THE EC TO ACCOUNT FOR APPLICABLE PERSONNEL.
- FAILURE OF THE EC TO RESPOND TO THE STACK RELEASES.
- FAILURE OF REGULATORY TO RESPOND TO THE POWDER AND/OR NITRIC ACID SPILL.
- FAILURE OF REGULATORY TO RESPOND TO THE STACK RELEASES.
- FAILURE OF MEDICAL TO RESPOND TO THE INJURED PERSON.
- FAILURE OF MEDICAL TO PROPERLY TREAT THE INJURED PERSON.
- FAILURE OF REGULATORY TO MONITOR THE INJURED PERSON.
- FAILURE TO FOLLOW PROCEDURES ON HANDLING THE INJURED PERSON.

- FAILURE OF THE EMERGENCY BRIGADE TO WEAR LEVEL B SUITS WITH SUPPLIED AIR RESPIRATORS.
- FAILURE OF REGULATORY TO MONITOR THE CHEMICAL AREA FOR AIRBORNE AND CONTAMINATION FOLLOWING THE EVENT.
- FAILURE OF THE EC/ED TO PROPERLY CLOSE OUT THE EVENT.
- FAILURE OF THE OFF SITE EMS TO USE PROPPER PROTOCOL IN TREATING THE VICTIM.

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THE FOLLOWING IS A LIST OF ACCEPTABLE CRITERIA:

- EC REQUIRES A SAMPLE OF THE SPILLED MATERIAL TO ESTIMATE CRITICALITY POTENTIAL.
- EC PLACES THE SPILLED MATERIAL IN A TANK IN THE SCRAP AREA.
- OFF SITE EMS USES PROPER PROTOCOL.
- EC RECOGNIZES THE [POTENTIAL ENVIRONMENTAL IMPACT OF THE GASEOUS RELEASE.
- USING LEVEL A PERSONAL PROTECTIVE EQUIPMENT.
- IMMEDIATELY PLACING THE VICTIM ON OXYGEN PRIOR TO INITIATING DECONTAMINATION PROCEDURES.
- DECONTAMINATION IS FOR RADIOLOGICAL AND CHEMICAL CONTAMINANTS.
- EC EVACUATES THE CHEMICAL SIDE ONLY (DEPENDENT ON THE EXTENT OF GAS RELEASE).

THIS IS A DRILL !!

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A POLYPACK HAS FALLEN OFF A CART ONTO THE FLOOR.

THE POLYPACK HAS BROKEN OPEN, SPILLING POWDER ONTO THE FLOOR.

THE POWDER HAS MIXED WITH NITRIC ACID, PRODUCING A BROWN CLOUD.

THIS IS A DRILL !!

PC # 1 FROM CHEMICAL AREA CONTROLLER TO AN OPERATOR NEAR CONVERSION LINE 5

THIS IS A DRILL !!

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NITRIC ACID IS LEAKING FROM A FLANGE ON AN ACID LINE IN THE SCRAP CAGE.

THIS IS A DRILL !!

PC # 2 FROM CHEMICAL AREA CONTROLLER TO OPERATOR NEAR CONVERSION LINE 5

THIS IS A DRILL !!

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NITRIC ACID HAS FLOWED TO THIS POINT ON THE FLOOR, INDICATED BY THE BARRIER TAPE.

(TO BE USED IF PROP FAILS)

THIS IS A DRILL !!

PC # 3 FROM CHEMICAL AREA CONTROLLER TO AN OPERATOR NEAR CONVERSION LINE 5 OR TO A RESPONDER.

THIS IS A DRILL !!

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THIS EMPLOYEE IS UNCONSCIOUS.

HE IS IN RESPIRATORY DISTRESS.

THIS IS A DRILL !!

PC # 4 ATTACHED TO A SELECTED INJURY VICTIM IN THE CHEMICAL AREA.

THIS IS A DRILL !!

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THERE IS A THICK CLOUD OF FUMES EXTENDING FROM CONVERSION LINE 5 TO CONVERSION LINE 1 AND PELLET LINE 5.

(TO BE USED IF THE PROP FAILS)

THIS IS A DRILL !!

PC # 5 FROM CHEMICAL AREA CONTROLLER TO RESPONDER.

THIS IS A DRILL !!

INSTRUMENT READINGS OF INJURED EMPLOYEE.

EXTERNAL RADIATION: 0.3MR/HR.

CONTAMINATION: 500 - 1000CPM ALPHA DIRECT.

THIS IS A DRILL !!

PC # 6 FROM CHEMICAL AREA CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

CLOSING NITRIC ACID LINE AT THE MANIFOLD DOES NOT

STOP LEAK.

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THIS IS A DRILL !!

PC # 7 FROM CHEMICAL AREA CONTROLLER TO RESPONDER.

THIS IS A DRILL !!

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BROWN CLOUD IS VISIBLE, COMING FROM THE CONVERSION LINE 5 CALCINER COMBUSTION STACK.

THIS IS A DRILL !!

PC # 8 FROM CHEMICAL AREA CONTROLLER TO RESPONDER OR CHEMICAL AREA OPERATOR.

THIS IS A DRILL !!

STACK SAMPLE RESULT:

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INSTRUMENT READING: 150CPM ALPHA.

THIS IS A DRILL !!

PC # 9 FROM "SOUTH SIDE" CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

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IMPACTOR SAMPLE TAKEN IN THE AREA OF THE SFILL:

INSTRUMENT READING: 600 CPM ALPHA.

THIS IS A DRILL !!

PC # 10 FROM CHEMICAL AREA CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

IMPACTOR SAMPLE DOWNWIND OF PLUME:

INSTRUMENT READING: 50 CPM ALPHA.

THIS IS A DRILL !!

PC # 11 FROM "ENVIRONMENTAL" CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

ENVIRONMENTAL FILTER SAMPLE RESULT:

INSTRUMENT READING: 150 CPM ALPHA.

THIS IS A DRILL !!

PC # 12 FROM "ENVIRONMENTAL" CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

ENVIRONMENTAL FILTER SAMPLE RECOUNT AFTER DECAY:

INSTRUMENT READING: 100 CPM ALPHA.

THIS IS A DRILL !!

PC # 13 FROM "ENVIRONMENTAL" CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

CONTAMINATION AROUND BUILDING:

INSTRUMENT READINGS: 50 CPM ALPHA.

THIS IS A DRILL !!

PC # 14 FROM "SOUTH SIDE" CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

IMPACTOR SAMPLE AFTER RELEASE HAS BEEN TERMINATED:

INSTRUMENT READING: 50CPM ALPHA.

THIS IS A DRILL !!

PC # 15 FROM CHEMICAL AREA CONTROLLER TO REGULATORY RESPONDER.

THIS IS A DRILL !!

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RESULTS OF THE DRAGER TUBE SAMPLE: 0.5 PPM

THIS IS A DRILL !!

PC #16 FROM BRIGADE CONTROLLER TO RESPONDER

THIS IS A DRILL !!

THE EXERCISE IS TERMINATED

THIS IS A DRILL !!

PC #17 FROM EXERCISE CONTROLLER TO EMERGENCY COORDINATOR

THIS IS A DRILL !!

THIS IS A DRILL !!

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THIS IS A DRILL !!

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ARE YELLOW IN COLOR AND ARE GIVEN TO EMERGENCY

RESPONDERS TO PROMPT THEM TO "SEE" EVENTS OR

CONDITIONS TAKING PLACE WHICH THEY WOULD ACTUALLY

SEE AND REACT TO IN A REAL EMERGENCY SITUATION.

BACK-UP CARDS

ARE BLUE IN COLOR AND ARE GIVEN TO EMERGENCY RESPONDERS TO PROMPT THEM TO TAKE SPECIFIC

ACTIONS WHICH THEY SHOULD HAVE TAKEN.

THIS PREVENTS THE EXERCISE FROM STOPPING OR FLOUNDERING, OR "GOING IN THE WRONG DIRECTION". BACK-UP CARDS WILL BE WRITTEN BY EMERGENCY CONTROLLERS AS NEEDED (IF NEEDED). IMPLEMENTING PROCEDURES HAVE BEEN WRITTEN IN A CHECKLIST FORMAT AND THIS SHOULD MINIMIZE THE NUMBER OF BACK-UP CARDS USED OR ELIMINATE THEIR NEED. THE FOLLOWING IS A LIST OF ITEMS THAT MAY REQUIRE A BACK-UP CARD:

- FAILURE OF THE EC TO ASSEMBLE THE EMERGENCY RESPONSE ORGANIZATION.
- · FAILURE OF THE EC TO ESTABLISH COMMUNICATIONS.
- FAILURE OF THE EC TO HAVE SECURITY MAKE AN ANNOUNCEMENT OF THE EVENT.
- FAILURE OF THE EC TO RESPOND TO THE POWDER AND/OR NITRIC ACID SPILL.
- FAILURE OF THE EC TO ORGANIZE THE EMERGENCY BRIGADE.
- FAILURE OF THE EC TO ESTABLISH A PLAN OF ATTACK FOR THE EMERGENCY BRIGADE.
- · FAILURE OF THE EC TO ESTABLISH TRAFFIC CONTROL.
- FAILURE OF THE EC TO RESPOND TO THE INJURED PERSON.
- FAILURE OF THE EC TO EVACUATE THE APPLICABLE PORTIONS OF THE CHEMICAL AREA.
- FAILURE OF THE EC TO PROPERLY CLASSIFY THE EVENT AS AN ALERT EMERGENCY.
- FAILURE OF THE EC TO ACCOUNT FOR APPLICABLE PERSONNEL.
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- FAILURE OF REGULATORY TO RESPOND TO THE POWDER AND/OR NITRIC ACID SPILL.
- FAILURE OF REGULATORY TO RESPOND TO THE STACK RELEASES.
- FAILURE OF MEDICAL TO RESPOND TO THE INJURED PERSON.
- FAILURE OF MEDICAL TO PROPERLY TREAT THE INJURED PERSON.
- FAILURE OF REGULATORY TO MONITOR THE INJURED PERSON.
- FAILURE TO FOLLOW PROCEDURES ON HANDLING THE INJURED PERSON.

• FAILURE OF THE EMERGENCY BRIGADE TO WEAR LEVEL B SUITS WITH SUPPLIED AIR RESPIRATORS.

- FAILURE OF REGULATORY TO MONITOR THE CHEMICAL AREA FOR AIRBORNE AND CONTAMINATION FOLLOWING THE EVENT.
- FAILURE OF THE EC/ED TO PROPERLY CLOSE OUT THE EVENT.

BACK-UP CARD

WRITTEN BY:

ISSUED TO:

THIS IS A DRILL !!

THIS IS A DRILL !!

REASON FOR ISSUANCE: