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Unconfined Underground Radioactive Waste and Contamination in the 200 Areas

AUTHOR

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UNCONFINED UNDERGROUND RADIOACTIVE WASTE AND
 CONTAMINATION IN THE 200 AREAS

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by

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January 17, 1956

Hanford Atomic Products Operation
 Richland, Washington

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UNCONFINED UNDERGROUND RADIOACTIVE WASTE
AND CONTAMINATION IN THE 200 AREAS

The purpose of this report is to document the present knowledge about locations in the 200 Areas where radioactive wastes have been discharged to the ground. The primary intent is to prevent future use of these sites for other purposes without knowledge of the existing contamination problem, not to determine whether the waste could contaminate the ground water.

In this report the Redox particle problem during 1954 has been omitted except where the concentration was sufficient to warrant posting the area as a radiation zone. Also, only those disposal sites within tank farms that were planned and scheduled have been included as the entire tank farm is now considered as having sufficient underground contamination to require monitoring for any excavating.

Although considerable effort was extended to supplement HW-28471 "Unconfined Underground Waste", dated 7/1/53, and to make this report complete with the information available through November 1955, the nature of the subject and the numbers of different organizations involved in waste disposal allow the possibility of omitting pertinent data. The cooperation extended by Monitoring and Manufacturing personnel has been greatly appreciated and it is further requested that anyone having knowledge of waste disposals which may supplement material covered in this document forward the information to the office of Exposure Illustrator, Radiological Sciences Department, 703 Building.

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200 EAST AREA

216-BY CRIBS (1 through 8)

Cribs 1 through 3, located to the north of the "BY" tank farm were used for the disposal of TBP building scavenged waste from tanks 106, 107, 108, and 110-BY during the period November, 1954 through June, 1955. Cribs 4 and 5 were used for disposal of similar waste in September, 1955. Cribs 6 and 7 were used for TBP building supernatant during November, 1955. The area above the cribs is delimited by a chain fence and posted with radiation zone signs. (Drawing reference 1, sketch A.)

216-BY CRIBS FLUSH TANK

Approximately 11,000 gallons overflowed from the flush tank during transfer of TBP building scavenged supernatant waste to crib 216-BY-5 on 9/15/55 to a location directly north of the flush tank. Most of the waste involved was removed to a site south of the 216-BY-1 crib and covered with two feet of clean soil and the contamination left near the flush tank was covered with approximately ten feet of clean soil. The exact location is not designated but is confined within an established radiation zone which is marked with a chain fence and radiation signs. (Drawing reference 2, sketch A.)

B-C WASTE LINE DRAIN CRIB

This crib or french drain, located to the north of 241-B tank farm, has not been used to date, but will soon be used to drain and flush the waste lines to the 216-BC cribs. The disposal unit consists of a 60 inch concrete pipe buried and filled with gravel surrounded by a 30 foot by 30 foot chain fence posted with signs stating "Underground Contamination". (Drawing reference 3, sketch A.)

241-B-3 CRIB AND TILE FIELD

Second cycle waste from 221-B has been routed since startup to tank storage in 241-B with the supernatant overflowing into the crib and tile field just north of the 110-111-112 tanks in the 241-B tank farm. In July 1951 the 5-6 cell drainage waste was also routed to this crib and tile field and continued until shutdown of the facility in 1952. The 224-B waste attendant with extensive decontamination and cleanup of the building during shutdown of the facility in 1952 were also routed to this cascade series, crib and tile field. The area is within the 241-B tank farm fence but is not further delimited. (Drawing reference 4, sketch A.)

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241-B-#1 AND #2 CRIBS

In September 1946, the 224-B wastes were routed to the 201-B settling tank. The supernatant overflowed from this tank to a two-crib cascade series just north of the 200 series tanks. In October 1948 the 224-B wastes were rerouted via the 204,203,202-B cascade settling tank series but the supernatant continued going to the same cribs. The 5-6 cell drainage waste was also routed to this crib from October 1947 until August 1948 and again starting in December 1954 to date. The cribs are within the 241-B tank farm fence but are not delimited in any way. (Drawing reference 5, sketch A.)

242-B-#1 AND #2 CRIBS

These cribs consist of 4 foot diameter steel culverts buried vertically 10 feet beneath ground level and 60 feet apart at a location just north of the 241-B tank farm. Condensate from the 242-B waste evaporator was discharged to the cribs from December 1951 until November 1954. The area is enclosed with a fence and posted with signs stating "Underground Contamination". (Drawing reference 6, sketch A.)

216-BX TRENCHES (1,2,4,5,6, and 7)

These six trenches, located to the west of 241-BX tank farm, were used for the disposal of first cycle supernatant trenching from the 110-B, 111-BX, 112-BX, 106-BY, and 110-BY tanks during the period from February through October 1954. The waste was covered with 10 feet of clean earth and signs stating "Underground Contamination" were posted on the east and south sides only. (Drawing reference 7, sketch A.)

216-BX-3 TRENCH

This trench, located with the other "BX" trenches near the 241-BX tank farm, was used for the disposal of first cycle evaporator bottoms from tanks 107, 108, and 109-B during the month of August 1954. The waste was covered with approximately 10 feet clean earth and posted on the east side with a sign stating "Underground Contamination". (Drawing reference 8, sketch A.)

216-BX-8 TRENCH

This trench, also west of 241-BX tank farm, was used during January and February 1955 for the disposal of TBP building scavenged waste from the 110-BY tank. The waste was covered with 10 feet clean earth and posted on the south side with a sign stating "Underground Contamination". (Drawing reference 9, sketch A.)

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241-B-153 DIVERSION BOX

Contamination spread associated with work being done on the 153-B diversion box during 1954 and 1955 caused a general build-up of contamination. An area 50' x 100' is delimited by radiation tape and radiation zone signs. (Drawing reference 10, sketch A.)

241-B-152 DIVERSION BOX

An incident which occurred during the spring of 1954 while performing diversion box work caused an area approximately 50' square to become highly contaminated. A portion of the contaminant was removed and buried while the rest was covered with several inches of clean fill, delimited with rope and posted with radiation zone signs. (Drawing reference 11, sketch A.)

241-B-151 DIVERSION BOX

The area around the box was contaminated as a result of diversion box work in the fall of 1951 and again in the summer of 1952. Most of the contamination was removed and that remaining was covered with approximately a foot of clean soil. The area involved is delimited with a chain fence and posted with signs stating "Underground Contamination." (Drawing reference 12, sketch A.)

242-B TO 207-B WASTE LINE

Five leaks in the 242-B to 207-B condensate line were discovered in June 1953. Contamination levels up to 2500 c/m were measured at the points of emission of water from the ground. No determination of the activity below ground surface has been made. The area was backfilled with about two inches of clean earth but is not delimited in any manner. (Drawing reference 13, sketch A.)

200 EAST INDUSTRIAL BURIAL GROUND

This burial ground, located between the "B" facility exclusion area and the 241-BX, BY tank farm is used for disposal of process equipment. The first trench was dug in 1947 and at the present time there are about nine trenches that have been filled with waste and covered with clean earth. Two trenches are open and currently being used. The area is enclosed with a wire fence and is posted with radiation zone signs. (Drawing reference 14, sketch A.)

GROUND CONTAMINATION NEAR DIVERSION BOXES
241-BX-153 AND 241-BX-155

A spill which occurred during pressure testing of lines and jumpers in the 155-BX diversion box on October 6, 1955 caused the ground to become contaminated to a maximum detected dosage rate of 22.6 rads/hr at surface. The area, approximately 200' square, is designated a radiation zone by a combination of a tape and chain fence posted with radiation zone signs. (Drawing reference 15, sketch A.)

CONSTRUCTION BURIAL GROUND

A burial ground, first used during February, 1955 by construction forces, was established for the disposal of wastes removed from the 221-B during modifications to the building in 1955. There are two trenches running in a north-south direction, both covered with approximately 8-10 feet of clean soil. The area is delimited with a wire fence posted with radiation zone signs. (Drawing reference 16, sketch A.)

241-B-361 CRIB AND TILE FIELD

In August, 1948 the 361-B crib and tile field just north of the 361-B settling tank was completed and the 5-6 cell drainage waste from the 221-B was rerouted from the 201-B tank and cribs direct to this crib and tile field, by-passing the 361-B settling tank. In July, 1951 the use of this crib was discontinued. The area is enclosed with a wire fence posted with radiation zone signs. (Drawing reference 17, sketch A.)

241-B-361 REVERSE WELL⁽¹⁾

From startup in April 1945, the 224-B building waste and the cell drainage from the 221-B 5-6 sump were routed to the 361-B settling tank from which the supernatant overflowed into the 361-B reverse well which had been drilled to a depth of 300 feet. In September 1946 the 224-B wastes were routed elsewhere; however, the 361-B reverse well continued to receive the 5-6 cell drainage up to October, 1947 at which time the presence of contamination in the ground water beneath the well was verified and the use of the well was discontinued completely. The area above ground is enclosed in a wire fence and is posted with radiation zone signs. (Drawing reference 18, sketch A.)

(1) Term designating a pipe encased drilled hole, commonly called a reverse well, or a reverse flow well, or a dry well. The lower end of the pipe is perforated to allow seepage to the ground.

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GROUND CAVE-IN NEAR 241-B-361 CRIB

✓ Leakage from the waste line while cell wash water was being jetted from the 5-9 tank in the 221-B building to the 361-B crib on 11-30-54 caused the ground to cave in near the 361-B crib. Approximately 5000 gallons of liquid were lost to the ground with the maximum surface dosage rate observed being 1.7 rads/hr over an area 30 feet square. The contamination was covered and the area delimited by a chain fence that is posted with signs stating, "Underground Contamination." (Drawing reference 19, sketch A.)

216-ER-#1, #2, AND #3 CRIBS

✓ These cribs are located approximately 1000 feet northwest of the 221-B building. Condensate of low-level activity from the evaporators in the 221-U and 224-U buildings has been disposed of here since November 1952. They are covered with approximately 10 feet of clean earth and are marked above ground with a wooden fence and posted with radiation zone signs. (Drawing reference 20, sketch A.)

241-B-154 DIVERSION BOX

✓ Metal waste solution was spread to the ground around this diversion box as a result of work associated with replacement of a leaky jumper in the box late in 1946. The contamination was covered with approximately a foot of clean soil and posted as a radiation zone by enclosing the area with a wire fence and attaching radiation zone signs. (Drawing reference 21, sketch A.)

R-3 RADIATION ZONE

✓ A leak during 1946 from an underground metal waste line south of the 221-B building resulted in the spread of an unknown quantity of activity to an area 100 feet wide by 500 feet in length. A portion of the area above the leak caved in but was subsequently backfilled with several feet of clean gravel. The area is enclosed with a wire fence and is posted with radiation zone signs. (Drawing reference 22, sketch A.)

BURIED CONTAMINATION

✓ Contaminated forms, a shack, and other wooden items were removed from the 291-B stack area during clean-up of the exclusion area in the fall of 1955. A trench approximately four feet deep was dug and the contaminated items were burned with the ashes being covered. Area is designated above ground by three signs stating "Underground Contamination." (Drawing reference 23, sketch A.)

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222-B DRYWELL

This well consists of a three foot diameter pipe sunk 75 feet into the ground near the northwest corner of the 222-B building. It was used to receive waste from the 222-B decontamination sink and sample "slurper" from startup of the building until the winter of 1949. The area above ground is delimited by a wooden fence but is not posted as a radiation zone. (Drawing reference 24, sketch A.)

222-B DRY WASTE DISPOSAL VAULTS

The three vaults in this group are located approximately 200 feet south of the 222-B building. The first vault was built in 1945 and filled by 1950, at which time the second vault was constructed. This second vault was still in use in 1952 when the building was shut down. Both these vaults have 12" square, baffled chute openings over the center and both are delimited above ground by wooden fences posted with radiation zone signs. The third vault was first used in 1954 and has a two foot metal corrugated pipe opening for packaged waste disposal. This vault is enclosed by a chain fence posted with radiation zone signs. (Drawing reference 25, sketch A.)

222-B-#1 AND #2 CRIBS

Two cribs, cascading in series from east to west, were built in 1949 to receive the 222-B decontamination sink waste and the sample "slurper" wastes. Wastes from research work carried on in 292-B were also directed to these cribs. The area is enclosed above ground with a wooden fence and posted with radiation zone signs. (Drawing reference 26, sketch A.)

241-ER-151 DIVERSION BOX

In March, 1953, at least 1700 gallons of contaminated acid were lost to the ground when the catch tank developed a leak. No ground surface contamination was detected. The area is established as a radiation zone by a cyclone fence and radiation zone signs. (Drawing reference 27, sketch A.)

C-CANYON EXCAVATION

This is a long trench located immediately north of the Hot Semi-Works exclusion area. The trench was first used for coil and condenser cooling water in June 1953 and is currently being used for the disposal of miscellaneous types of cooling water from nearly all buildings in the 201-C exclusion area. The area is enclosed with a wooden fence and posted with radiation zone signs. (Drawing reference 28, sketch A.)

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✓
216-C-2 DRYWELL

This drywell or french drain has been used since startup of the Hot Semi-Works to collect the drainage from the stack pan and ventilation filter water seal. The area above ground is not designated in any way. (Drawing reference 29, sketch A.)

✓
216-C-4 CRIB

This crib, located near the leaching pit in the southwest corner of the 201-C exclusion area, has been used intermittently since July 1955 for the disposal of contaminated organic wastes from the 276-C building. The area is delimited above ground by a wooden fence and radiation zone signs. (Drawing reference 30, sketch A.)

✓
216-C-3 CRIB

The leaching pit, as 216-C-3 crib is called, was used from startup through March 1954 for wastes from the 201-C building. The access to the crib has since been blanked off and the crib abandoned. The area above ground is not designated in any way. (Drawing reference 31, sketch A.)

✓
216-C-5 CRIB

Crib 216-C-5, located near the leaching pit, has been used since March 1955 for the disposal of high salt, cold-run wastes from the 201-C building. The area is delimited above ground by a wooden fence and radiation zone signs. (Drawing reference 32, sketch A.)

✓
216-C-1 CRIB

This crib is covered with two feet of dirt and is located south of the 201-C building. Liquid wastes that are within the cribbing limits were first discharged from the Hot Semi-Works to the crib during January 1953. The area is enclosed with a wooden fence and posted with radiation zone signs. (Drawing reference 33, sketch A.)

✓
216-C-6 CRIB

This crib was first used for the disposal of condensate from tank #72 and floor drain wastes from the 241-CX vault during September 1955. Other than being within the 241-CX tank farm radiation zone it is not designated above ground. (Drawing reference 34, sketch A.)

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✓ SOLID WASTE BURIAL GROUND

This area, located approximately 2000 yards east of the power house and 2000 yards south of the Hot Semi-Works, was used for disposal of packaged waste from the process buildings from 1945 until March, 1953 at which time all open trenches were filled with approximately three feet of clean soil. A monument has been erected on the center line at the ends of all trenches and the area is enclosed with a wire fence posted with radiation zone signs. (Drawing reference 35, sketch A.)

216-A-10 CRIB

✓ This crib, located to the south of the 202-A building, is approximately 500 feet long by 20 feet wide. It is planned that this crib will be used for the disposal of process condensate from the 202-A building. The area is delimited above ground by a chain fence posted with radiation zone signs. (Reference drawing 36, sketch A.)

✓ 216-A-5 CRIB

This crib, located south of the 202-A building, was first used in November 1955 for the disposal of process condensate from the 202-A building. The area above ground is posted as a radiation zone by a chain fence and radiation zone signs. (Drawing reference 37, sketch A.)

✓ 216-A-2 CRIB

This crib, to be used soon for the disposal of organic waste from the 202-A building, is situated to the south of the 291-A stack area and is delimited with a chain fence and posted with radiation zone signs. (Reference drawing 38, sketch A.)

✓ 216-A-4 CRIB

This crib, located south of the 291-A stack area and near 216-A-2 crib, was first used in November, 1955 for the disposal of lab, cell, and stack drainage from the Purex facilities. The area above ground is delimited with a chain fence and posted with radiation zone signs. (Drawing reference 39, sketch A.)

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✓
216-A-6 CRIB

This crib, located east of Purex and outside the 200-E perimeter fence, was first used in November 1955 for the disposal of steam condensate from the 202-A building. A wire fence, posted with radiation zone signs, delimits the area above ground. (Drawing reference 40, sketch A.)

✓
216-A-3 CRIB

This crib is soon to be used for the disposal of waste from the 203 silica gel facilities in Purex. It is located to the north of the 203-A building and is posted as a radiation zone by chain fence and radiation zone signs. (Drawing reference 41, sketch A.)

✓
216-A-9 CRIB

This crib, approximately 500 feet long by 20 feet wide, is located to the north of 202-A building. It is soon to be used for the disposal of condensate from the vacuum acid fractionator in the 202-A building. The area is delimited above ground by a chain fence and posted with radiation zone signs. (Drawing reference 42, sketch A.)

✓
216-A-7 CRIB

Crib 216-A-7, located east of 241-A tank farm and outside the 200-E perimeter fence, was first used in November, 1955 for the disposal of sump drain wastes from the 241-A-152 diversion box. The area above ground is delimited with a wire fence and posted with radiation zone signs. (Drawing reference 43, sketch A.)

216-A-1 CRIB

This crib, located east of 200 East area was used in November 1955 for the disposal of cold-run waste during the startup of Purex facilities. Approximately 152 kilograms of uranium contained in 26,500 gallons of liquid were covered with ten feet of clean soil. The area above ground is delimited by a rope fence and radiation zone signs. (Drawing reference 44, sketch A.)

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216-A-18 CRIB

This crib, also referred to as 216-A-8 crib (unfinished) is located east of the 241-A tank farm and outside the 200 East area perimeter fence. It was used during November, 1955 for the disposal of cold-run wastes from the 202-A building at which time approximately 19 kilograms of uranium contained in 21,200 gallons of liquid waste were disposed of and covered with several feet of clean earth. The area is designated a radiation zone by a rope fence posted with radiation zone signs. (Drawing reference 45, sketch A.)

216-A-19 TRENCH

This trench, near the 216-A-18 crib was also used for the disposal of cold-run wastes from the 202-A building during November and December 1955. An open ditch approximately 225 feet long was used to route an estimated 2460 kilograms of uranium contained in approximately 129,000 gallons of waste to this disposal site. The trench and ditch have been covered with several feet of clean earth and the ground surface above both the trench and the ditch is delimited by a rope fence and radiation zone signs. (Drawing reference 46, sketch A.)

216-A-8 CRIB

This crib, first used for the disposal of 241-A condensate and cooling water during November, 1955, is located northwest of the 241-A tank farm and outside the 200-E area perimeter fence. The crib is approximately 1000 feet long by 20 feet wide and is posted a radiation zone by a chain fence and radiation zone signs. (Drawing reference 47, sketch A.)

DIVERSION BOXES 241-C-151, 152, and 153

The area surrounding these three diversion boxes is contaminated due to a general buildup of contamination over a long period of time caused by work in the diversion boxes. An area approximately 100 feet square was chained off and posted with "Underground Contamination" signs in the spring of 1955. (Drawing reference 48, sketch A.)

241-CR STEAM CLEANING PIT

A pit for steam cleaning heavy equipment was dug during 1954 northeast of the 103-CR tank. The approximate center coordinates are N-42,800 and W-48,200. The pit has been covered but is not delimited above ground in any way other than being within the 241-C tank farm fence. (Drawing reference 49, sketch A.)

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DITCH FROM "B" RETENTION BASIN TO SWAMP

The trench and swamp have been in use since startup of "B" facility for the disposal of process tank jacket cooling water. Analyses of samples of water and mud from the ditch and swamp have shown only low-level activity to date. Condenser cooling water from the 244-BX metal recovery facilities was directed via the trench to the swamp on startup of this unit in March 1953. The ditch where open above ground and the swamp are posted about every 100 feet with radiation zone signs. (Drawing reference 50, sketch A.)

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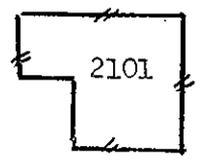
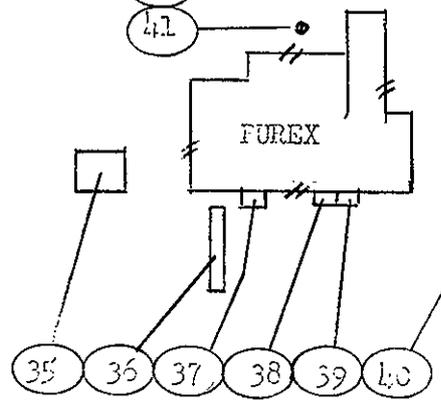
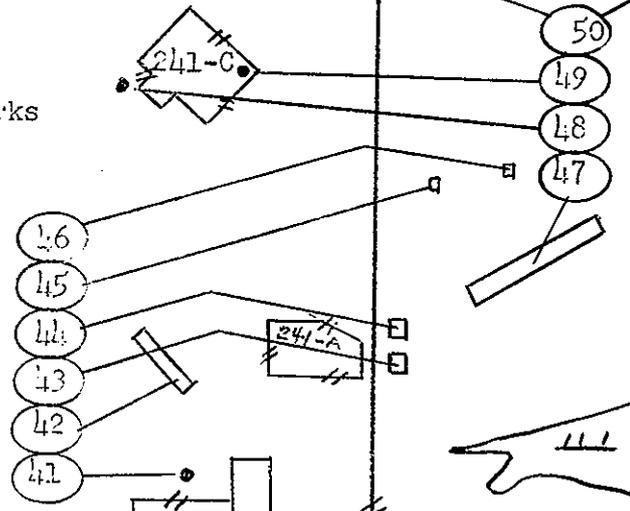
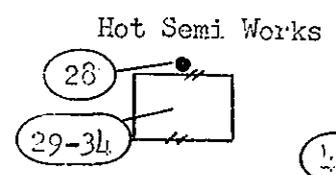
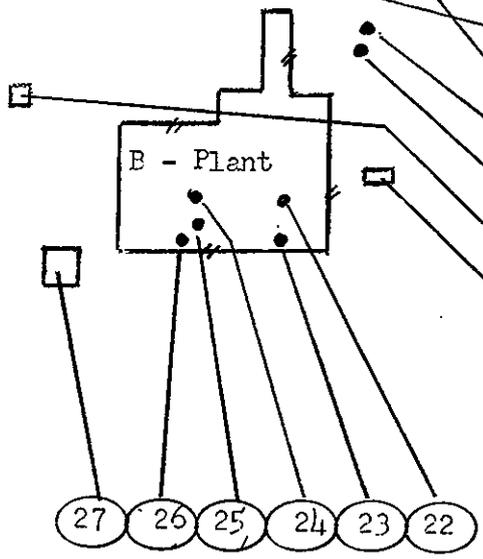
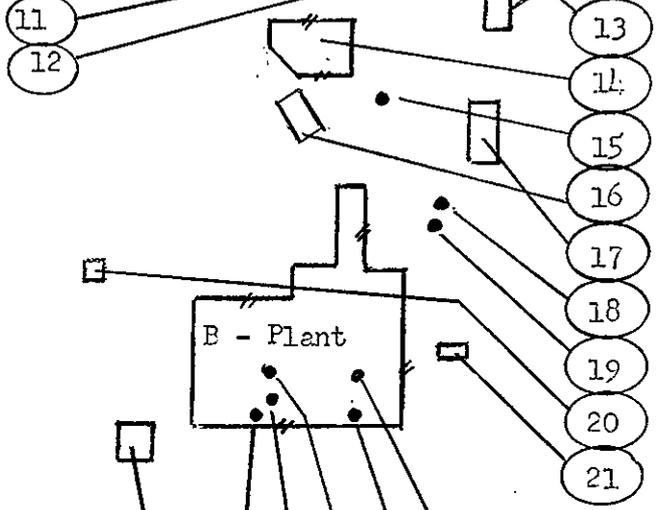
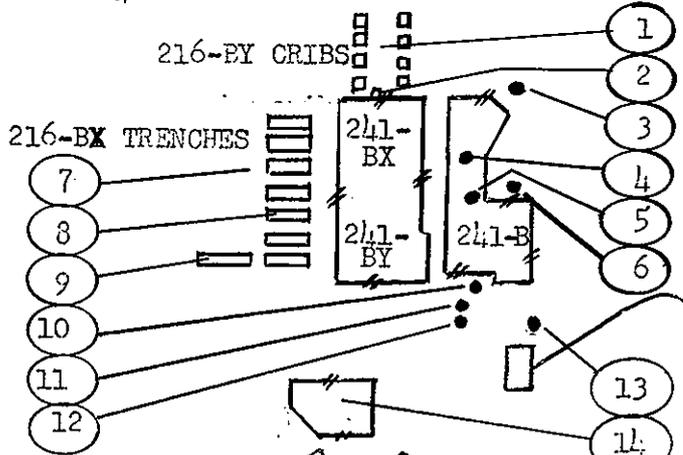
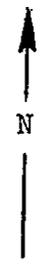
A trailer carrying 1600 gallons of UNH solution overturned on 12-30-54 spreading contamination to the roadway and the nearby ditch. The maximum dosage rate observed was 60 mrads/hr at the surface. That portion of the contaminant that could be recovered was removed and the balance was washed off the road and covered at the location indicated in sketch B. The road was resurfaced and the area posted with a sign stating, "Underground Contamination."

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216-BY CRIBS

216-BX TRENCHES

200 EAST AREA



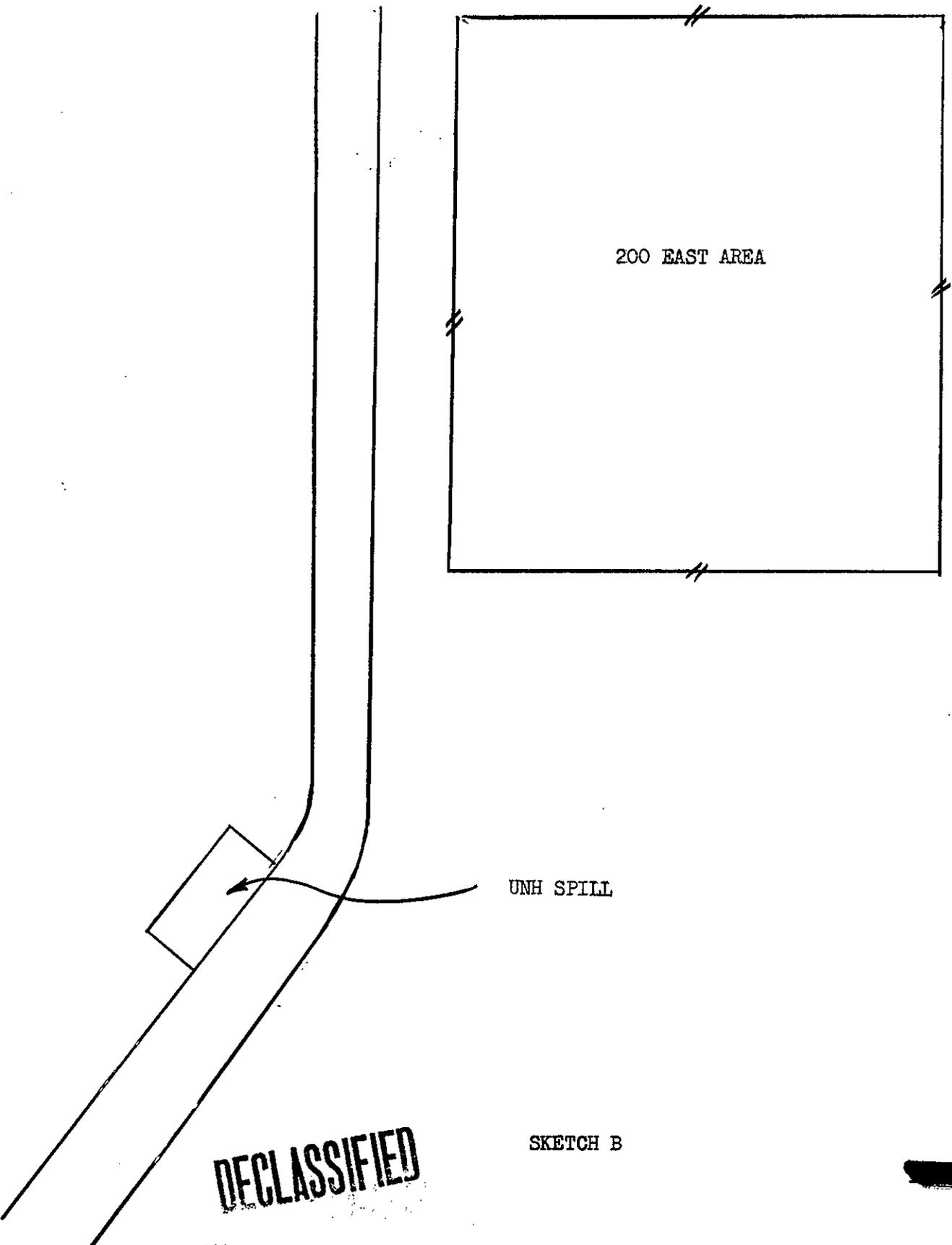
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SKETCH A

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200 EAST AREA

UNH SPILL

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SKETCH B

200 WEST AREA

REDOX EXCLUSION AREA

LEAK FROM UNH PROCESS LINE

A leak from a process line occurred during the summer of 1954 in the northwest corner of the Redox exclusion area. The contaminated area was covered and marked as a radiation zone by use of magenta and yellow tape and radiation zone signs. (Drawing reference 1, sketch D.)

203-S TANKS

The ground around the 203-S uranium storage tanks was contaminated with uranium in the summer of 1952. A maximum counting rate of 10,000 c/m at one inch was observed in this area. The contaminated area was covered with black-top and enclosed with a wooden rail fence posted with radiation zone signs. (Drawing reference 2, sketch D.)

240-S-151 DIVERSION BOX AREA

Diversion box work in January and February, 1953 resulted in extensive ground contamination. An area around the box of approximately 1000 square feet was covered with six inches of clean gravel. This is roped off and posted with radiation zone signs. (Drawing reference 3, sketch D.)

REDOX PARTICLE FIELD

An area including the east portion of the Redox exclusion area, and extending eastward for several hundred yards, was contaminated in the spring of 1952 with radioactive particles emitted from the Redox stack. The activity was due essentially to Ru-¹⁰³ and Ru-¹⁰⁶. Gross beta activity of some of the particles approached 0.1 μ c. The area with the highest concentration of these particles is delimited and posted as a radiation zone. (Drawing reference 4, sketch D.)

REDOX STACK FLUSH TRENCH

Early in July 1954, the Redox stack was flushed and approximately 20,000 gallons of flush water was drained into a pit 20 feet wide, 90 feet long, and 10 feet deep situated in the northeast corner of Redox exclusion area. An estimated five curies of beta particle emitters and two to three curies of gamma particle emitters, predominantly Ru and Zr-Nb, were disposed of here and covered with several feet of clean soil. The area is not indicated above ground but the approximate coordinates are: N-34,965 and W-73,384. (Drawing reference 5, sketch D.)

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REDOX EXCLUSION AREA (Continued)

✓ 216-SL CRIBS

These cribs have been in use since early 1952 receiving laboratory waste of low activity from the 222-S building. They are located approximately ten feet underground and have a filtered vent above the ground. They are enclosed with a single rail wooden fence which is posted with radiation zone signs. (Drawing reference 6, sketch D.)

✓ 222-S DRY WASTE DISPOSAL VAULT

This vault has been in use since early 1952 receiving dry packaged waste from the 222-S laboratory. The vault is a steel tank approximately twelve feet in diameter, fourteen feet high and is buried with its top about six feet below ground level. The area above ground is delimited by a chain fence and is posted with radiation zone signs. (Drawing reference 7, sketch D.)

221-T EXCLUSION AREA

✓ 222-T CRIBS #1 AND #2

Two standard type cribs cascading in series were built in spring of 1950 to receive waste from the 222-T building previously sent to the 222-T drywell. These cribs are located approximately 500 feet east of 222-T. The area is delimited above ground by a wooden rail fence and is posted with radiation zone signs. (Drawing reference 1, sketch E.)

✓ 222-T DRY WASTE DISPOSAL VAULTS

This disposal group consists of three vaults receiving dry packaged waste from the 222-T building. The first one built in 1944 and the second one built in 1949 are of wooden construction 10 feet wide by 12 feet long by 10 feet deep and covered with about six feet of clean earth. The third vault built in 1950 is approximately 10 feet in diameter and 30 feet deep. It was constructed of concrete rings and is the only one of the three vaults still in use. All three vaults are located in a north-south line 200 feet east of the 222-T building. The area is marked as a radiation zone by a wooden rail fence and radiation zone signs. (Drawing reference 2, sketch E.)

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221-T EXCLUSION AREA (Continued)

✓
222-T DRY WELL

This well consists of a three-inch diameter pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe is perforated to allow liquid waste to seep out into the soil. The well is located approximately 12 feet south and three feet west of the northwest corner of the 222-T building. It was used to receive waste from the 222-T decontamination sink and sample "slurper" from start-up until the spring of 1950, after which time the wastes were routed to the 222-T cribs. The area is enclosed in a wooden rail fence and is posted with radiation zone signs. (Drawing reference 3, sketch E.)

✓
R-19 RADIATION ZONE

A leak in an underground metal waste line at the southeast corner of the 221-T building in the spring of 1947 resulted in the spread of an unknown amount of activity to the ground. A maximum dose rate of 20 r/hr at two inches was detected. The area was subsequently covered with several feet of gravel and was enclosed with a wire fence posted with radiation zone signs. (Drawing reference 4, sketch E.)

✓
GROUND CONTAMINATION - 241-TX-154 DIVERSION BOX

A cave-in of the ground occurred early in July 1953 over a process line near the 241-TX diversion box causing an extended area on both sides of the road between 221-T and 222-T buildings to become contaminated to a maximum detected dose rate of 25 rep/hr at eight inches. This area has been covered with blacktop and posted with underground contamination signs. (Drawing reference 5, sketch E.)

✓
291-T SAND FILTER SEWER

The 291-T sand filter inlet trenches drain to a french drain pipe extending into the ground at the north corner of the sand filter. Any moisture condensed from the canyon air on the filter bed will escape to the ground at this location. The amount and activity are both very low. (Drawing reference 6, sketch E.)

✓
"T" FACILITY RAILROAD CUT

Contamination from cask cars and equipment being hauled to the burial ground was spread to the ground along the railroad on several occasions during 1949. In the spring of 1950 the contamination was covered with about ten inches of clean gravel. This area is within an established radiation zone. (Drawing reference 7, sketch E.)

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221-U EXCLUSION AREA

✓
BURIED CONTAMINATED SOIL

Contamination caused by a leak from 224-U during March 1954 was spread to an area southeast of the 224-U building. This contamination was buried in a trench approximately 10 feet wide by 50 feet long and covered with three feet clean soil. The area is now covered by the 224-UA addition. (Drawing reference 1, sketch F.)

✓
222-U DRY WELL

This well consists of a pipe sunk approximately 75 feet in the ground. The bottom 20 feet of the pipe is perforated to allow liquid waste to seep out into the soil. The well is located approximately 12 feet south and three feet west of the southwest corner of 222-U. It was first used to receive liquid wastes from the 222-U laboratory in the spring of 1947. Both plutonium and fission product wastes from the decontamination hoods used in the laboratory drain into this unit. The pipe has been sealed off above ground level but is not posted as a radiation zone. (Drawing reference 2, sketch F.)

✓
221-U VESSEL VENT BLOWER PIT FRENCH DRAIN

In June 1953 an estimated 380 pounds of uranium (UNH solution) overflowed into the 221-U building vessel vent blower pit and then to ground through the french drain. This is in an established radiation zone. (Drawing reference 3, sketch F.)

"U" FACILITY UNIRRADIATED URANIUM WASTE TRENCHES

622
Approximately 1.19×10^6 gallons of liquid containing about 16,000 pounds of test run unirradiated uranium were discharged to these trenches following start-up of the facility in 1952. Coordinates of the center lines of the trenches are N-39,042, W-73,038, N-39,018, and W-72,940. The trenches have been backfilled and the area is delimited by a rope fence posted with underground radiation signs. (Drawing reference 4, sketch F.)

"Z" FACILITIES

✓
234-5 #3 AND #4 CRIBS

During the summer of 1952 these two cribs were constructed and tied in series to the line from the 234-5 building to the tile field. These cribs are located approximately 100 feet east of #1 and #2 cribs and are included within the posted cyclone fence. (Drawing reference 1, sketch C.)

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"Z" FACILITIES (Continued)

234-5 #1 AND #2 CRIBS AND TILE FIELD

This disposal unit is located approximately 200 yards south of the 234-5 retention basin and receives low-level activity from the 234-5 building. All wastes from the 234-5 building were discharged to this unit from start-up in June 1949 until the summer of 1952 when the #3 and #4 cribs were added to this series. (Drawing reference 2, sketch C.)

234-5 DRYWELLS #1, #2, AND #3

Dry well #1, located approximately 50 feet northeast of the 234-5 stack, receives potentially contaminated liquid wastes from the 234-5 tunnel drain sump. Dry well #2, located about 50 feet northwest of the 234-5 stack and dry well #3, located about 150 feet directly north of well #2, receive the 234-5 evaporator condenser water. These drywells are not marked above ground as radiation zones. (Drawing reference 3, sketch C.)

WASTE BOX FIRE SOUTH OF 234-5 BUILDING

Plutonium contamination up to 10,000 d/m was caused by a fire in a waste box in June 1953. Approximately 300 square feet of ground contamination south of the 234-5 building has been covered with blacktop and posted with a sign reading, "DANGER--DO NOT EXCAVATE IN THIS AREA WITHOUT SWP PERMISSION." (Drawing reference 4, sketch C.)

231-W REVERSE WELL

This disposal unit consists of a six-inch diameter pipe encased hole sunk to a depth of 150 feet. It is located approximately 130 feet east of the 231 building and was in use for only a few months, February to June of 1945, receiving liquid waste from the 231 building when it became plugged with sludge. Approximately 50 grams of plutonium associated with about 260,000 gallons of liquid were released to the unit during this period. The area is designated a radiation zone by a wooden fence and radiation zone signs. (Drawing reference 5, sketch C.)

231-W, #1 AND #2 CRIBS

This disposal unit, consisting of two cribs each 12' x 12' x 4' deep, is located approximately 160 feet northeast of the 231 building. It was put into service in June 1945 and received approximately 340 grams of plutonium associated with 7.1 x 10⁶ gallons of wastes before it was sealed with sludge in February 1947. The area is delimited by a wooden barricade and radiation zone signs. (Drawing reference 6,

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HW-213

200 WEST AREA GENERAL

✓
REDOX SWAMP

This area, located about 3000 yards southwest of the 202-S building, was used for the disposal of tank cooling water. Several leaks in process tank cooling coils resulted in the release of considerable contamination to this area prior to April 1954 at which time the swamp area was abandoned and covered with clean earth. The area is posted above ground with signs stating "Underground Contamination." (Drawing reference 1, sketch G.)

✓
CHEMICAL SEWER TRENCHES

These two trenches are located outside and to the southwest of the 200 West area. They were first used in the spring of 1954 for the disposal of process vessel cooling water from the 202-S building. During May of 1954 one of the trenches was contaminated to a maximum observed dose rate of 800 mrad/hr. The other trench is currently being used. Both are posted with "Underground Contamination" signs. (Drawing reference 2, sketch G.)

BURIED CONTAMINATED HEXONE

Approximately 20,000 gallons of hexone contaminated with only trace quantities of unirradiated uranium used in the initial tests of Redox was buried about 350 feet southeast of the Redox sanitary tank farm in January 1952. The waste was buried in a trench eight feet by 100 feet and covered with six feet of clean earth. The area is delimited above ground with a wooden fence, posted with radiation zone and "Do Not Excavate" signs. (Drawing reference 3, sketch G.)

DITCH - "U" SWAMP TO "S" SWAMP

This ditch became contaminated in September 1953, and was covered in the spring of 1954 with two feet of clean soil. It has been designated a radiation zone by "Underground Contamination" signs posted at intervals on both sides of the ditch. (Drawing reference 4, sketch G.)

✓
216-S-5 CRIB

This crib is located outside of and to the southwest of the 200 West area and has been used since March 1954 for disposal of the 202-S process vessel cooling water and heating condensate water. The area is delimited above ground by a chain fence and "Underground Contamination" signs. (Drawing reference 5, sketch G.)

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200 WEST AREA GENERAL (Continued)

216-S-6 CRIB

This crib is located a short distance to the southeast of 216-S-5 crib and has been used for disposal of 202-S process vessel cooling water and heating condensate water since November 1954. (Drawing reference 6, sketch G.)

OPEN DITCH TO CHEMICAL SEWER TRENCHES

This ditch is exposed from the 200 West area perimeter fence to the chemical sewer trenches. It is posted with signs on both sides of the ditch stating "Underground Contamination." (Drawing reference 7, sketch G.)

OPEN DITCH TO CHEMICAL SEWER TRENCHES (OVERFLOW)

The ditch to the chemical sewer trenches overflowed during May 1955 contaminating about an acre of ground between the open ditch and the east trench. The maximum dose rate detected was 1 r/hr at the ground surface. The contamination was covered and the area posted with "Underground Contamination" signs. Following this incident the ditch itself was dredged and the removed sludge was placed in low spots on both sides of the ditch and covered with two feet of clean soil. (Drawing reference 8, sketch G.)

222-S SWAMP

This area, located outside the 200 West area and about 1000 yards south of the 222-S laboratory, is used for the disposal of drainage from the lab sinks and wall drains. In December 1953, contamination up to 200 mrad/hr at ground surface was discovered over an area approximately 300 feet long and three feet wide. The area is delimited by a chain fence and radiation zone signs. (Drawing reference 9, sketch G.)

BURIED CONTAMINATED EQUIPMENT

Approximately fifty empty 55-gallon oil drums, contaminated as a result of the particle problem in and around Redox in 1952, were buried about 500 feet directly east of the northeast corner of the Redox exclusion area fence and were covered with six feet of clean soil. The area is not marked above ground. (Drawing reference 10, sketch G.)

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200 WEST AREA GENERAL (Continued)

✓ 276-S CRIB

This crib, located 400 feet west of 276-S building, was built in 1951 and received contaminated organic waste from the solvent handling building. The crib is buried under ten feet of dirt and is delimited above ground with a wooden fence that is posted with radiation zone signs. (Drawing reference 11, sketch G.)

✓ BURIED METAL SCRAP

Contaminated metal scrap including the 211-S tank taken from Redox facilities was buried in September 1954 northwest of the Redox exclusion area. The location is designated by four corner posts marked with "Do Not Excavate" signs. (Drawing reference 12, sketch G.)

✓ GROUND CONTAMINATION NEAR UNH PROCESS LINE

A leak occurred in the UNH process line from Redox to "U" plant in September 1955 at a location just outside and to the north of the Redox exclusion area. This area is posted as a radiation zone by rope and a radiation zone sign. (Drawing reference 13, sketch G.)

✓ STEAM CLEANING PIT NORTHEAST OF 241-SX TANK FARM

This trench is about 15 feet by 100 feet and has been used since the fall of 1954 for decontaminating vehicles. It is delimited above ground by a chain fence and radiation zone signs. (Drawing reference 14, sketch G.)

✓ 216-S-11 TEST WELL

The casing for the test well near the 216-S-2 crib apparently collapsed some time during August 1955, allowing highly contaminated wastes a direct route to the ground water. The test well was immediately sealed off by backfilling and is posted as a radiation zone by a chain fence posted with signs stating "Underground Contamination." (Drawing reference 15, sketch G.)

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200 WEST AREA GENERAL (Continued)

✓ 216-S, #1 AND #2 CRIBS

This disposal unit consists of two standard cribs, 12 feet wide by 12 feet long by nine feet deep in series and spaced 50 feet apart. The cribs are located 200 yards southeast of the 241-S-151 diversion box. Condensate and cell drainage that was within cribbing limits was first discharged to the cribs in January 1952. The cribs are buried under ten feet of dirt and are delimited above ground with a chain fence posted with radiation zone signs. (Drawing reference 16, sketch G.)

✓ UNIRRADIATED URANIUM WASTE TRENCH (REDOX)

Approximately 81,500 gallons of liquid containing about 430 pounds of unirradiated uranium were discharged to this trench during the latter portion of 1951 and early in 1952. The coordinates of this trench are N-35,300 and W-75,400. The trench has been backfilled with six feet of clean soil and is delimited above ground with "Do Not Excavate" signs. (Drawing reference 17, sketch G.)

✓ 110-S TANK AIR CONDENSER OVERFLOW

The cooling water supplied to the air condensers on the 110-S waste tank became contaminated in the fall of 1952 from the condensing vapors arising from within the tank. This resulted in the spread of contamination to the condenser cooling water receiving pond located just east of the 241-S tank farm. A maximum dose rate of 10 rads/hr was observed at the surface of this pond before it was covered with two feet of clean soil. The area is delimited above ground by a wooden fence and "Do Not Excavate" signs. (Drawing reference 18, sketch G.)

✓ 216-S-3 CRIB

This crib was built in August 1953 to handle the highly contaminated condensate from the 101-S and the 104-S tanks. It is located directly east of the 104-S tank at the edge of the 241-S area. It is enclosed within a wooden fence and is posted with "Underground Contamination" signs. (Drawing reference 19, sketch G.)

✓ 216-SX-1 CRIB

This crib, used since November 1954 for the disposal of condensate from the 101-SX and 104-SX tank cascades of the 241-SX tank farm, is located to the west of the 241-S tank farm. The area above ground is delimited by a wooden fence posted with radiation zone signs. (Drawing reference 20, sketch G.)

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200 WEST AREA GENERAL (Continued)

216-S-4 CRIB

This crib is located immediately west of the 241-S tank farm and has been used since August 1953 for the disposal of condensate from the 101-S and the 104-S tank cascades in the 241-S tank farm. The area is delimited above ground by a wooden barricade and radiation zone signs. (Drawing reference 21, sketch G.)

"U" SWAMP

This swamp is located southwest of the 241-U tank farm and receives water from the powerhouse and waste water from the laundry, 234-5, 231, and "U" facility buildings. In the summer of 1955 the swamp was enlarged to include an area outside of the 200 West area perimeter fence with the waste running through a culvert under the fence and fence-lined road. The east side of the swamp has a chain fence and is posted with radiation zone signs, while the rest of the swamp is posted at intervals with underground contamination signs. (Drawing reference 22, sketch G.)

216-U-3 CRIB

This crib is located to the south of the 241-U tank farm and has been used since May 1954 for the disposal of condensate from the 110-U tank cascade of the 241-U tank farm. The area above ground is posted a radiation zone by a wooden barricade posted with radiation zone signs. (Drawing reference 23, sketch G.)

241-UR STEAM CLEANING PIT

A steam cleaning pit within the 241-UR area, 100 feet west of the 103-UR tank, contains beta-gamma contamination up to 50 mrads/hr at ground surface. This pit is only occasionally used and is backfilled as necessary to prevent contamination spread. The trench is within the 241-UR tank farm and is also roped off to separate it from the rest of the radiation zone. (Drawing reference 24, sketch G.)

151-U AND 152-U DIVERSION BOXES

The ground around these boxes was contaminated in the spring of 1950 to a maximum observed dose rate of 20 mrads/hr at surface. The contamination was covered with a foot of clean soil and the area above ground delimited by a rope barricade posted with radiation zone signs. (Drawing reference 25, sketch G.)

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200 WEST AREA GENERAL (Continued)

✓ OPEN DITCH - LAUNDRY TO "U" SWAMP

Since August 1955 approximately 150,000 gallons per day of laundry water has been running through this ditch to a point north of the "U" plant. Here the ditch was dredged until the soil became sufficiently porous to allow the water to enter the ground water table. Both sides of the ditch and the disposal site are posted with both radiation zone and "Underground Contamination" signs. (Drawing reference 26, sketch G.)

✓ 216-UR, #1 AND #2 CRIBS

This disposal unit consisting of a concrete tank 20 feet by 20 feet and two standard cribs in series is located approximately 800 feet west of the 224-U building. Contaminated liquid wastes from the TBP solvent treatment are discharged to this unit. The area is delimited above ground with a wooden fence posted with radiation zone signs. (Drawing reference 27, sketch G.)

✓ OVERFLOW NEAR 361-U SETTLING TANK AND 216-UR CRIB

Organic wastes and cell drainage from the TBP and UO₃ plants overflowed to the ground by way of the tank and crib vents in the spring of 1953. Ground contamination up to 11.5 rads/hr at three inches was found over an area of approximately 50 square feet. Decontamination was attempted and the area was then backfilled, delimited with a wooden fence, and posted with radiation zone signs. (Drawing reference 28, sketch G.)

✓ 388-U TANK DUMPING

Approximately 7000 gallons of interface crud, activated charcoal, and diatomaceous earth, containing about one curie of fission products, was transferred from the 388-U tank to a hole at coordinates N-38,270 and W-73,900. The hole was backfilled and the area was delimited by a wooden fence posted with signs stating "Underground Contamination." (Drawing reference 29, sketch G.)

✓ 216-WR, #1, #2, AND #3 CRIBS

This disposal unit consists of three standard Hanford cribs which are located about 1000 feet south of the 224-U building. Condensate wastes from the 221-U concentrators has been discharged to these cribs since the summer of 1952. The area is delimited above ground with a wooden fence posted with radiation zone signs. (Drawing reference 30, sketch G.)

200 WEST AREA GENERAL (Continued)OLD BURNING GROUND

Contamination was discovered in the spring of 1950 in the old burning ground which is located approximately 1500 feet east of the "U" facility. An area of 150 square feet of ground was observed to be contaminated to a maximum dose rate of 45 rads/hr at two inches. The area was subsequently covered with about ten feet of clean earth and is posted with "Underground Contamination" signs. (Drawing reference 31, sketch G.)

216-Z-9 CRIB

This crib, approximately 500 feet east of 216-Z-8 crib, has been used for disposal of extraction process and aqueous wastes from the Recuplex facilities since 7-18-55. The area is delimited above ground by a chain fence but is not posted as a radiation zone. (Drawing reference 32, sketch G.)

216-Z-8 CRIB

This crib, to the east of 234-5 building, was first used on 7-18-55 for silica gel overflow from the Recuplex facilities. The area is delimited above ground by a chain fence but is not posted as a radiation zone. (Drawing reference 33, sketch G.)

ORIGINAL 231 DRAINAGE DITCH TO "U" SWAMP

This ditch has been abandoned and backfilled. Both sides of the ditch are posted with "Underground Contamination" and "Radiation Zone" signs. (Drawing reference 34, sketch G.)

231-W-3 CRIB

Very little information has been found concerning this disposal unit. It is believed to have been merely a hole in the ground, located approximately 100 feet northeast of the 231-W drywell, designed to receive the 231 building liquid wastes for a short period following the unexpected loss of the use of the 231 drywell in June 1945. The area has been backfilled and earth mounded up over it. It is delimited above ground by a wooden fence posted with radiation zone signs. (Drawing reference 35, sketch G.)

200 WEST AREA GENERAL (Continued)

✓ 231-W-4 CRIB

This crib is located approximately 100 feet southeast of the 231-W drywell and is believed to have been used similar to 231-W-3 crib. The ground has caved in over this area suggesting that it may have been constructed with a wooden top. The area is enclosed with a wooden rail fence posted with radiation zone signs. (Drawing reference 36, sketch G.)

✓ SOLID WASTE BURIAL GROUND

This burial ground, located northeast of the 231 building, was first used in 1944. Twenty-two filled trenches have been backfilled with six feet of clean soil and concrete posts with a "Do Not Excavate" sign placed at each end of the trenches. Two open trenches are currently being used for disposal of waste. The entire burial ground is enclosed with a wire fence posted with radiation zone signs. (Drawing reference 37, sketch G.)

✓ 241-TX, #1, #2, #3, #4, and #5 TRENCHES

These five trenches situated to the west of the 241-TX tank farm were used for the disposal of first cycle supernatant from the 109, 110, and 111-TX tanks and the 101 and 102-TY tanks in the summer of 1954. They are covered with eight to ten feet clean soil and are posted with "Underground Contamination" signs. (Drawing reference 38, sketch G.)

✓ 231-W TRENCH

This trench, eight feet wide by 150 feet long, is located approximately 600 feet east of the 231 building. Liquid wastes from the 231 building have been routed to this trench since February 1947. The trench is covered with a wooden top which is, in turn, covered with dirt. The area is surrounded by a wire fence posted with radiation zone signs. (Drawing reference 39, sketch G.)

✓ 241-TX-153 CRIB AND TILE FIELD

This disposal unit consists of a standard crib and tile field and is located in the 241-TX tank farm. It receives the condensate from the 242-T waste evaporator. Wastes with low-level activity have been discharged to this unit since September 1951. (Drawing reference 40, sketch G.)

200 WEST AREA GENERAL (Continued)

✓ FRENCH DRAIN NEAR 241-TX TANK FARM

This french drain was contaminated in the fall of 1954 to a maximum observed dose rate of 50 mrad/hr by a blowout of steam going through the tank farm process lines. It is marked by a radiation zone sign secured to the cover of the french drain. (Drawing reference 41, sketch G.)

✓ 242-T BUILDING

While jetting concentrate from the waste evaporator in the spring of 1951, a few gallons of the waste was forced up and out of an open riser located above ground on the south side of the building. A maximum dose rate of two rads/hr at two inches was observed on this contaminated area. A portion of the contamination was removed and the balance covered with a foot of clean soil.

A somewhat similar incident occurred in September 1955 only on the west side of the building. Both areas are marked by wire fence posted with radiation zone signs. (Drawing reference 42, sketch G.)

✓ WASTE LINE 242-T TO 207-T

In October 1952 contaminated water was observed to be rising to the ground surface above the waste line between 242-T and the 207-T retention basin. The leak was repaired and the contaminated areas covered with about a foot of clean soil and gravel. The area is posted at intervals with "Underground Contamination" signs. (Drawing reference 43, sketch G.)

155-TX DIVERSION BOX

Contamination has been spread from this diversion box to the surrounding ground at various times during the past few years. An area on three sides of the box has been black-topped to fix the contamination and is delimited by a combination of wood, chain, and rope fence and signs. In November 1952, a contaminated nitric acid solution was pumped from the 155-TX catch tank to an excavation nearby. This waste was covered with about three feet of clean earth and the area above ground delimited by a wooden fence and posted with radiation zone signs. Again in the spring of 1954 a leak occurred from one of the jumpers in the diversion box causing the area 30 feet by 100 feet to the west of the diversion box to become contaminated. This area was covered with clean soil and temporarily posted a radiation zone; however, the fence and signs have since disappeared. (Drawing reference 44, sketch G.)

200 WEST AREA GENERAL (Continued)

216-TY, #1, #2, AND #3 CRIBS

These three cribs are located east of and across the road from the 241-TY tank farm. Crib 216-TY-1, first used in August 1955, has been the only one used for the disposal of first cycle scavenged waste from the 101, 103, and 104-TY tanks. The area is delimited above ground by chain fence and "Underground Contamination" signs. (Drawing reference 45, sketch G.)

TEST CRIB FOR BUILDING SCAVENGED TBP WASTE

In November 1953 approximately 265,000 gallons of building scavenged TBP waste was pumped to a crib on a test basis. The coordinates of the crib are N-42,650 and W-75,270. The crib is backfilled, delimited with a permanent chain barricade, and posted with "Underground Contamination" signs. (Drawing reference 46, sketch G.)

LEAK IN LINE FROM 105-TX TO 118-TX TANK

Leakage of first cycle waste was discovered in November 1954 with maximum dose rate of 4.5 r/hr observed at four feet over an area 100 feet wide by 125 feet long. The contamination was covered with approximately a foot of clean earth and delimited by a chain fence posted with radiation zone signs. (Drawing reference 47, sketch G.)

STEAM CLEANING PIT NEAR 369-W GARAGE

This pit was first used during the summer of 1954 to decontaminate heavy equipment. The area is designated a radiation zone partially by a wooden fence and partially by a chain fence, both posted with radiation zone signs. (Drawing reference 48, sketch G.)

241-T-3 CRIB AND TILE FIELD

Second cycle waste from the 221-T has been routed since start-up to tank storage in the 241-T tank farm with the supernatant overflowing into the 241-T-3 crib and tile field just west of the 110-T tank cascade in the 241-T tank farm. Supernatant did not begin to overflow until April 1948. In June 1951 the 221-T, 5-6 cell wastes were routed to this unit. In June 1952 the 224-T wastes were also routed here. This area is within the 241-T tank farm but is not otherwise designated. (Drawing reference 49, sketch G.)

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200 WEST AREA GENERAL (Continued)

241-T, #1 AND #2 CRIBS

This disposal unit consisting of two cribs in series which received the overflow from the 201-T and the 204-T tank cascades is located in the 241-T tank farm. It received the 224-T wastes from November 1946 to June 1952 as well. Other than being within the tank farm the area is not designated. (Drawing reference 50, sketch G.)

241-T-5 TRENCH

This trench was used during May 1955 for the disposal of second cycle supernatant from the 112-T tank. It is located in the northwest corner of the 241-T farm but otherwise is not marked above ground. (Drawing reference 51, sketch G.)

BURIED CONTAMINATED RAILROAD TRACKS

Two sections of railroad track contaminated during the fall of 1954 to maximum dose rates of 350 mrad/hr were buried due east of and across the tracks from the new Industrial Burial Ground. Both trenches are 15 feet by 30 feet and are covered with four feet clean dirt. The area is posted with "Underground Contamination" signs. (Drawing references 52 and 53, sketch G.)

NEW INDUSTRIAL BURIAL GROUND

In March 1954 use of the new Industrial Burial Ground was begun for the disposal of process tanks, contaminated waste, etc., from Redox facilities. There are five trenches that have been filled and covered, one open trench that is currently being used and room for a seventh trench before the burial garden is filled to capacity. An area immediately north between the present burial site and the "T" swamp has been reserved for future expansion of this disposal site. A wire fence and radiation zone signs mark this area as a radiation zone. (Drawing reference 54, sketch G.)

"T" SWAMP

This area has been in use since start-up receiving process vessel cooling water from the 221-T and 224-T buildings. The water is directed to the swamp via the 207-T retention basin and 500 feet of pipe followed by 500 feet of open ditch. The ditch and swamp are posted with signs stating "Underground Contamination". (Drawing reference 55, sketch G.)

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200 WEST AREA GENERAL (Continued)

Ref. 15

241-T, #1, #2, #3, AND #4 TRENCHES

These four trenches, situated to the north of the 207-T retention basin, were used for the disposal of first cycle supernatant from the 104, 105, and 106-T tanks during the first half of 1954. They are covered with eight to ten feet of clean soil and are posted with "Underground Contamination" signs. (Drawing reference 56, sketch G.)

Ref. 16

BURIED SLUDGE NEAR 207-T RETENTION BASIN

Contaminated sludge was removed from the 207-T basin on November 30, 1954 and buried in a 10 foot by 15 foot by 8 foot deep pit in the northeast corner of the 207-T radiation zone. An estimated curie of beta particle emitters were disposed of here and covered with three or four feet of clean soil. (Drawing reference 57, sketch G.)

151-T AND 152-T DIVERSION BOXES

Diversion box work performed in the spring of 1950 resulted in contamination spread to the ground around both boxes. A portion of the contamination was removed and the balance covered with about a foot of clean soil. The area is delimited with rope which is posted with radiation zone signs. (Drawing reference 58, sketch G.)

OLD INDUSTRIAL BURIAL GROUND

This burial ground, located northwest of the "T" facility, is no longer used for burial of waste. Approximately ten trenches have been filled and covered with six feet of clean soil since 1947. The area is posted with a combination of wire fence, rope, and radiation tape with radiation zone signs attached. (Drawing reference 59, sketch G.)

361-T, #1 AND #2 CRIBS (5-6 WASTE)

Two standard cribs were constructed near the 361-T reverse well in 1946. Overflow of the 224-T and 5-6 cell wastes from the 361-T drywell to these cribs was first noted in August 1946. In November of that year, the 224-T wastes were rerouted to other disposal sites but the 5-6 cell wastes continued until June 1951. The cribs are enclosed within separate wooden fences and both are posted with radiation zone signs. (Drawing reference 60, sketch G.)

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200 WEST AREA GENERAL (Continued)

361-T REVERSE WELL

This eight inch diameter pipe encased well is 206 feet deep and is perforated from a depth of about 104 feet to the bottom. From start-up in 1945 to August 1946 the well received the overflow from the 361-T settling tank which, in turn, was receiving waste from the 221-T, 5-6 cell drain sump and from the 224-T building. The area is delimited above ground by a chain fence posted with radiation zone signs. (Drawing reference 61, sketch G.)

EQUIPMENT DECONTAMINATION AREA

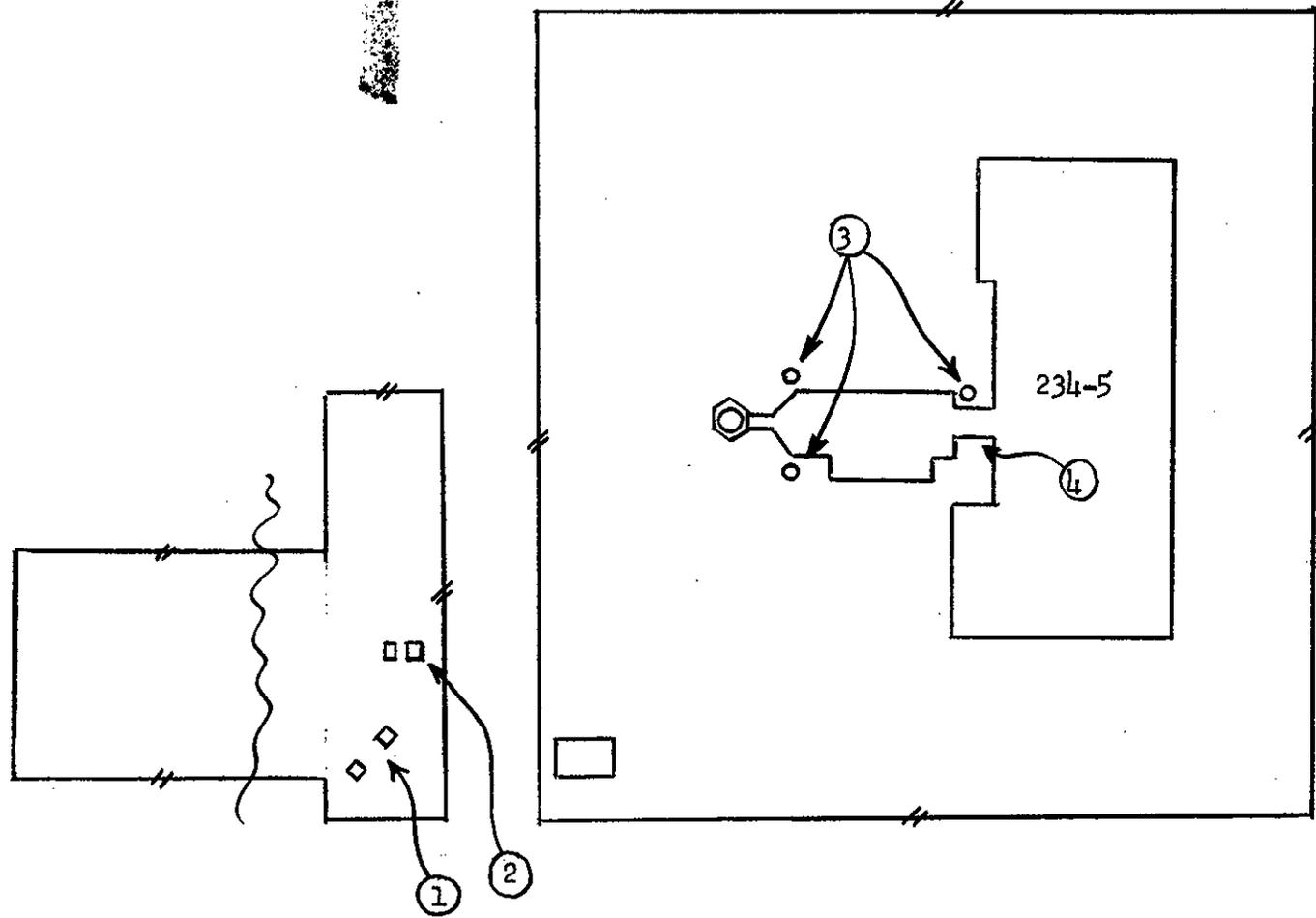
This area consists of three covered trenches which were used to decontaminate heavy equipment. It was constructed in 1951 and is located approximately 200 yards west of the "T" facility. The trenches were last used in the spring of 1954 and are now covered and posted above ground with signs stating "Underground Contamination." (Drawing reference 62, sketch G.)

URANIUM BURIAL TRENCH ("T"-FACILITY)

Unirradiated uranium waste from test runs during the original start-up of "T"-facility was buried in a trench located about 100 yards northwest of the 221-T building. The trench was backfilled with two feet of clean soil and is posted at intervals with "Underground Contamination" signs. (Drawing reference 63, sketch G.)

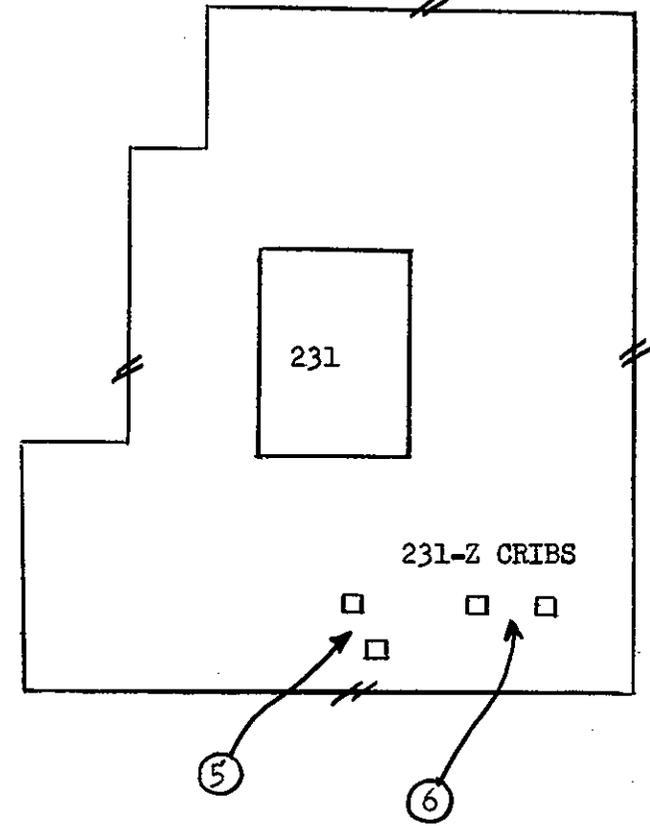
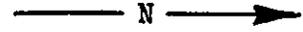
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"Z" FACILITIES

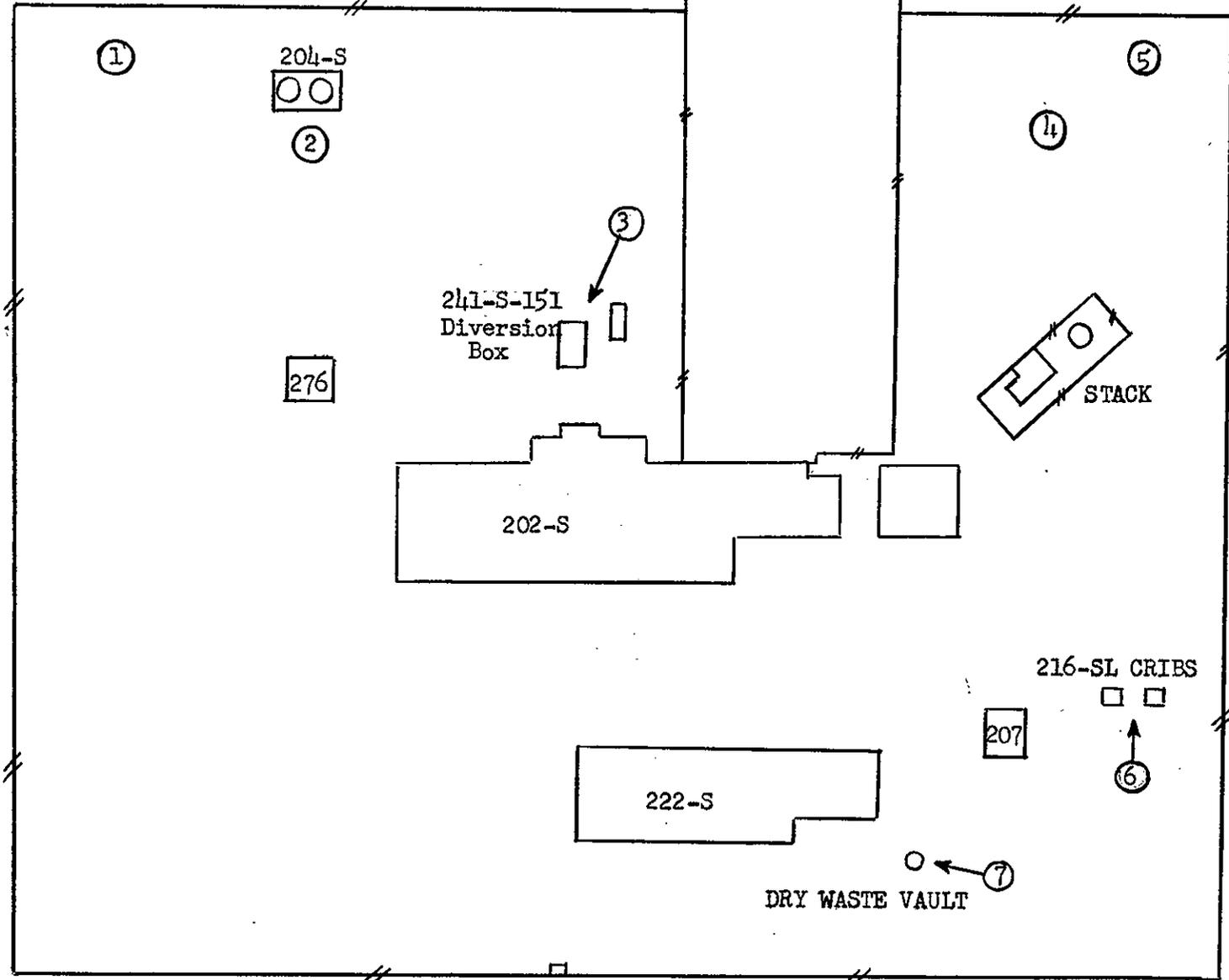
SKETCH C



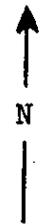
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HM-11535

REDOX EXCLUSION AREA



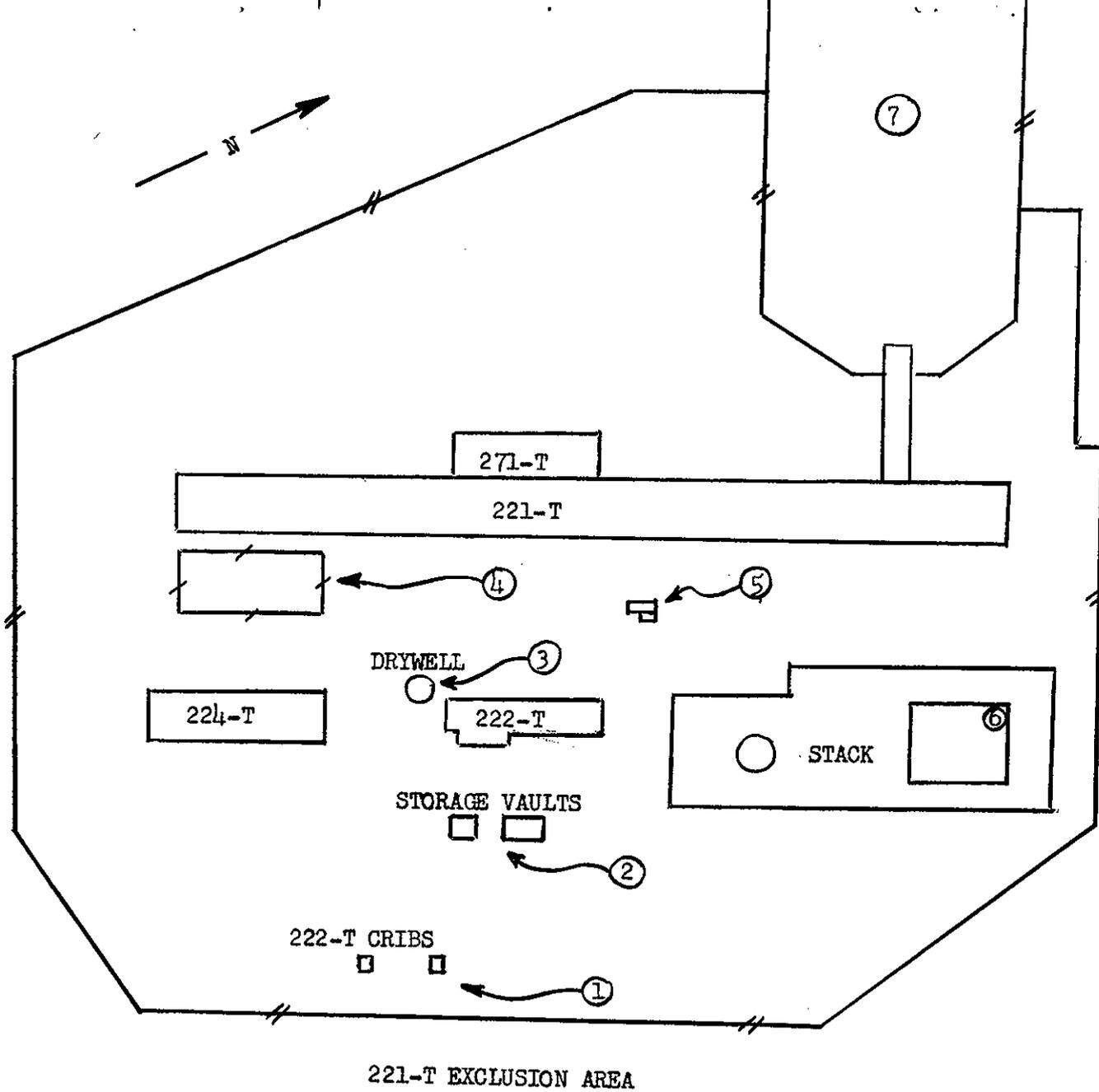
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SKETCH D

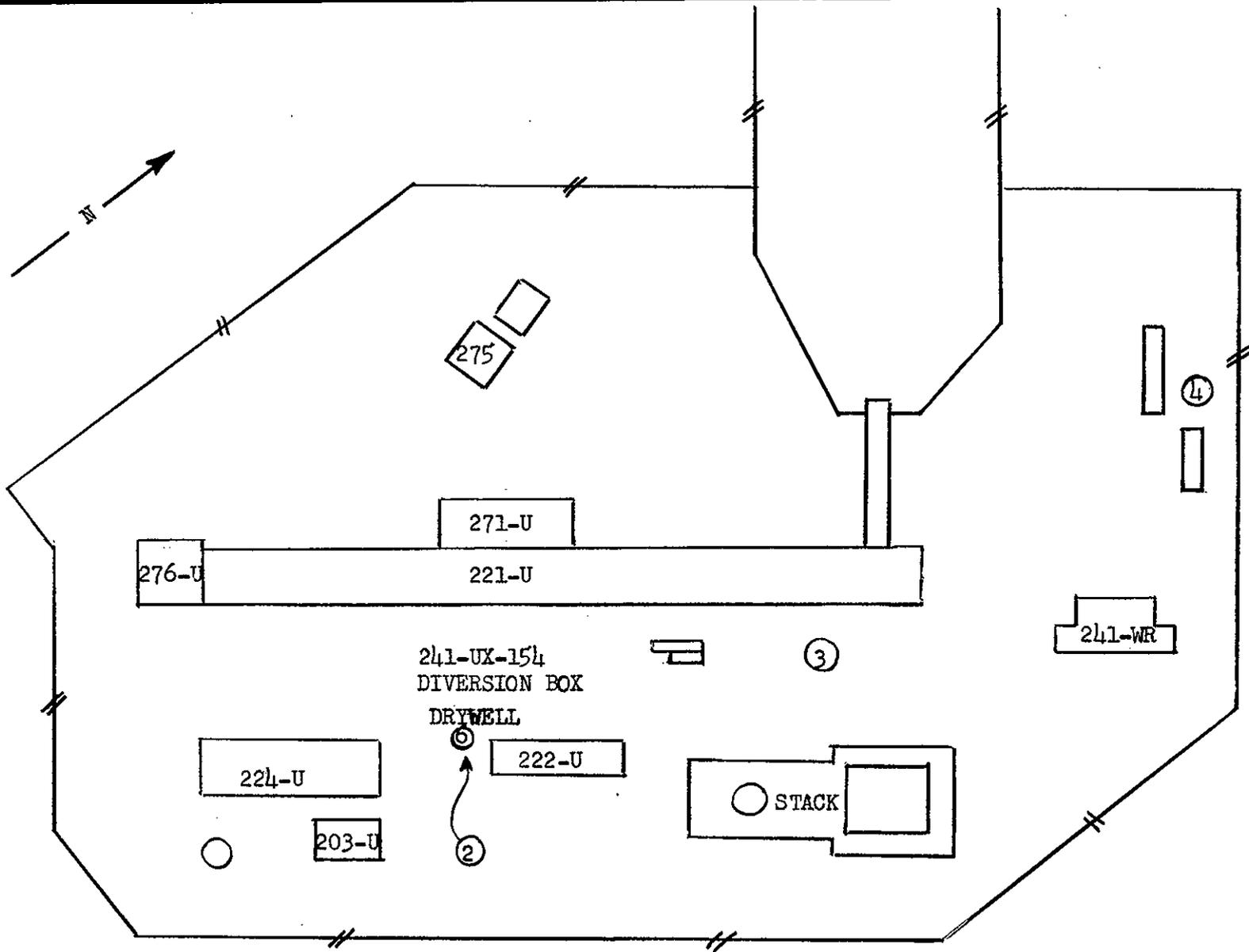
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SKETCH E

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241-UX-154
DIVERSION BOX
DRYWELL

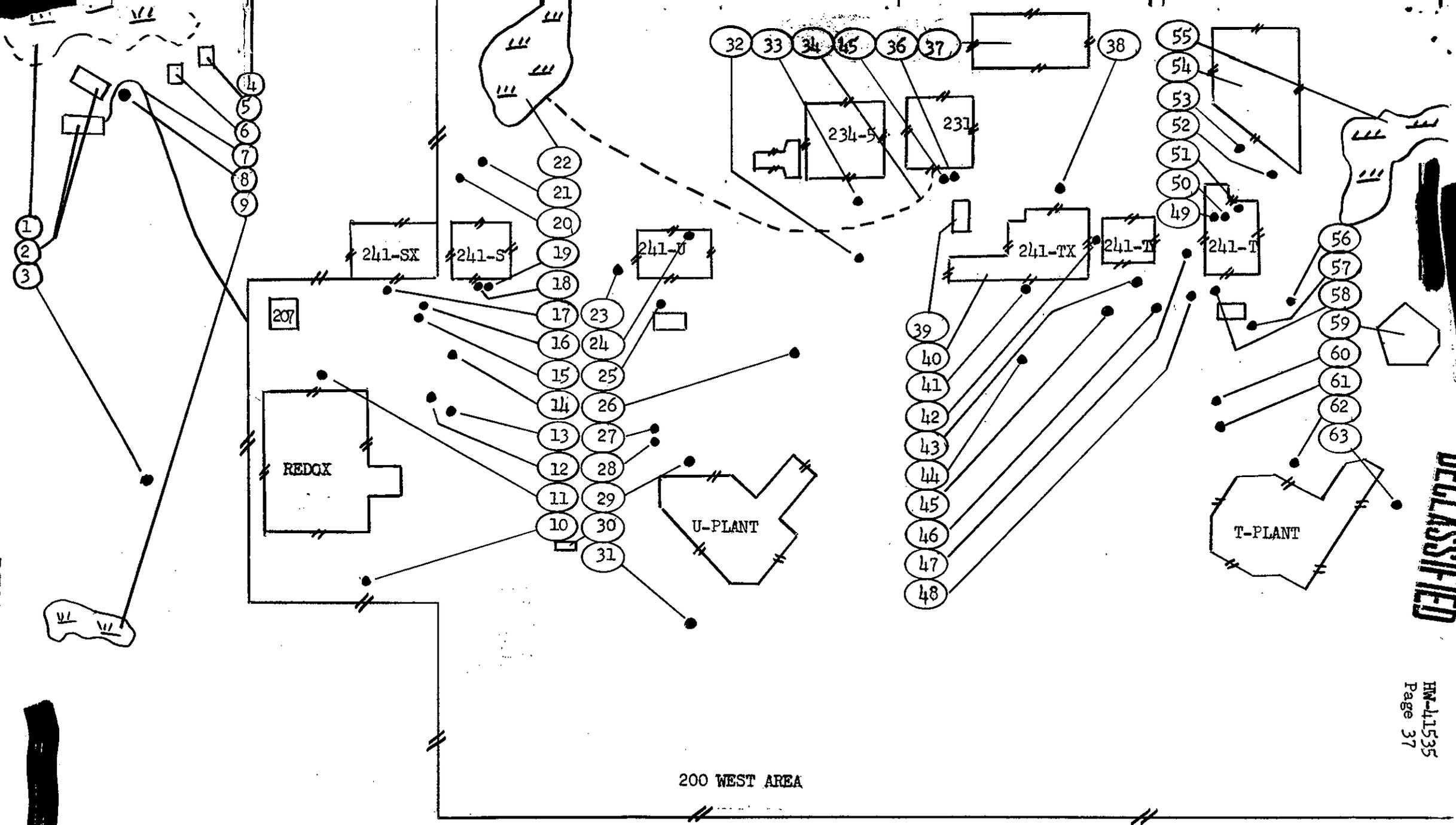
STACK

221-U EXCLUSION AREA

SKETCH F

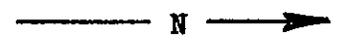
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200 WEST AREA

SKETCH G



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HW-41535

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200 NORTH AREA

212-N Storage Basin Crib No. 1

This crib was built in 1947 to receive all the basin water when it was drained in preparation for special tests that were to be conducted in the basin. It is covered with approximately six feet of clean earth and is enclosed above ground with a single rail wooden fence that is posted with radiation zone signs. (Drawing reference 1, sketch H)

212-N Storage Basin Crib No. 2

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and posted with radiation zone signs. (Drawing reference 2, sketch H)

212-P Storage Basin Crib

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and is posted with radiation zone signs. (Drawing reference 3, sketch H)

212-R Storage Basin Crib

This crib was built to receive the water remaining in the storage basin when the area was shut down in June 1952. It is covered with approximately six feet of clean earth and is delimited by a rope fence and is posted with radiation zone signs. (Drawing reference 4, sketch H)

212-N Swamp

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrads/hr was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way. (Drawing reference 5, sketch H)

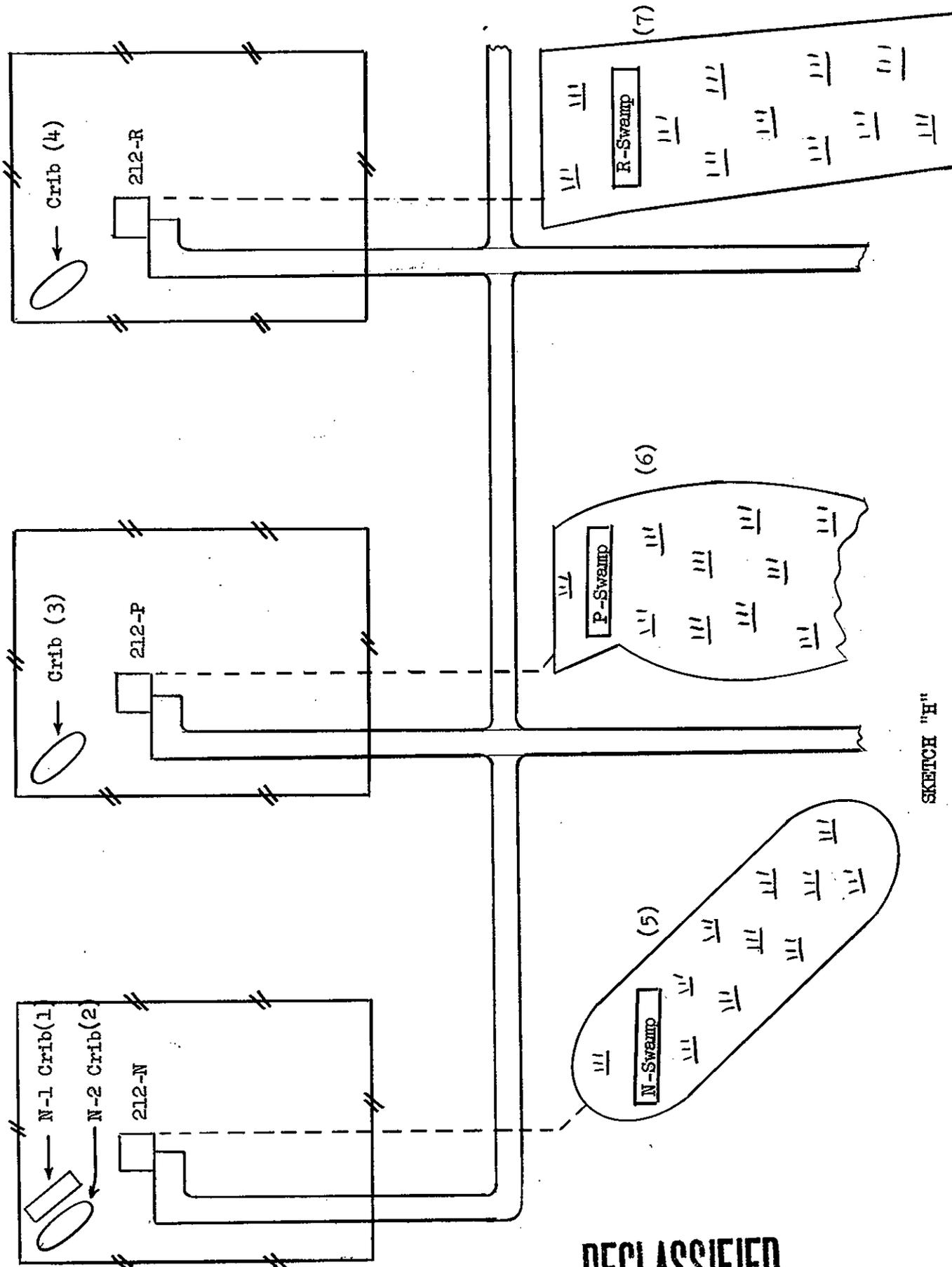
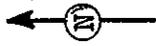
212-P Swamp

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrads/hr was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way. (Drawing reference 6, sketch H)

212-R Swamp

This area received the normal overflow from the basin from startup in 1944 to shutdown in June 1952. Contamination with a dose rate up to 50 mrads/hr was observed in this swamp. The area was subsequently backfilled with clean earth to a depth ranging from two to six feet. It is posted with radiation zone signs though it is not delimited in any other way. (Drawing reference 7, sketch H)

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SKETCH "H"