HISTORICAL TIME LINE

and

INFORMATION

About

The Hanford Site
Richland, Washington

Compiled by

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Richland, Washington

Reviewed and Approved for
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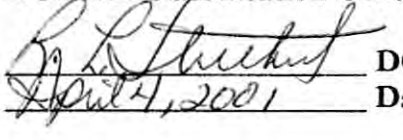

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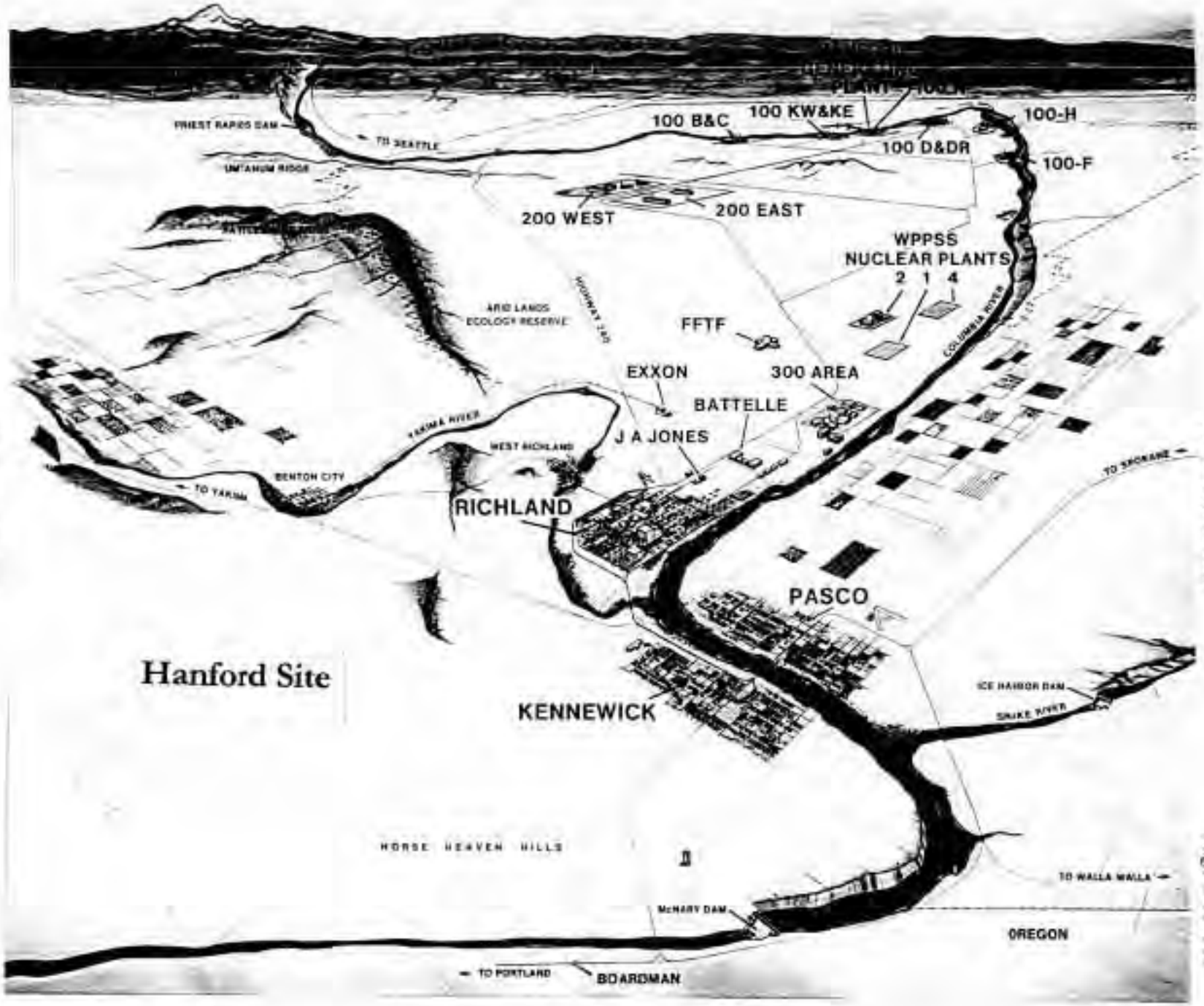
PLANT
100-H
100 B&C
100 KW&KE
100 D&DR
100-F
PRIEST RAPIDS DAM
TO SEATTLE
UMTANUM RIDGE
200 WEST
200 EAST
WPPSS
NUCLEAR PLANTS
2 1 4
ARID LANDS
ECOLOGY RESERVE
FFTF
COLUMBIA RIVER
EXXON
300 AREA
BATTELLE
YAKIMA RIVER
WEST RICHLAND
J A JONES
BENTON CITY
TO YAKIMA
TO SPOKANE
RICHLAND
PASCO
Hanford Site
KENNEWICK
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HISTORICAL TIME LINE and INFORMATION

Hanford Site

COMPILED BY J. D. BRIGGS

March 22, 2001

Introduction

The following is a summary of some of the more important (*I feel*) events concerning the Hanford Site that have been collected during the Large Scale Hanford Document Declassification Project. This project was initiated by the Pacific Northwest National Laboratory's National Security Analysis Team (NSAT) in January 1995 and is currently expected to be completed by September 30, 2003. NSAT reviewed the Hanford collection of classified documents (approximately 80,000) that have been issued since 1943. The purpose of this time line and the other interesting bits of related information is to provide the reader with some of Hanford's history that one would not normally see and with a quick reference about events that occurred during this time period. The dates, facilities and places are as accurate as possible. Any mistake that is noted is my fault and not the writers of the many documents from which I collected the information. If differences are noted, please advise and I will gladly make the necessary corrections to this document.

OVERALL PROGRAM COST

The overall costs to develop, design, fabricate and construct including supporting facilities:

- the first three atomic bombs (one test and two dropped on Japan) – approximately $2.2 billion, and

  the B-29 bomber program (used to carry the atomic bombs) - $2.3 billion.

YEAR 1892

Nelson Rich initiated land irrigation to Richland area with canal water from the Yakima River.

1905

Nelson Rich, state representative succeeded in getting a bill passed to form Benton County.

1910

Richland School has 250 students and 11 teachers

1919

Mail service discontinued during the winter due to the Columbia River being frozen over and delivery to Richland by boat made impossible.

1940

Plutonium (Pu) first identified at the University of California at Berkeley by chemist Glenn T. Seaborg and four co-workers.

1941

Feb. 24 Glenn T. Seaborg's research group discovers plutonium.

Dec. 7 Japanese forces attack U. S. forces and facilities at Pearl Harbor.

1942

Jan 19 Roosevelt approved development and production of the atomic bomb.

Nov. DuPont Corporation agrees to be prime contractor for construction and operation of Manhattan Engineering District (MED) plants and facilities. (December 21, 1942 – August 31, 1946).

Dec. 2 First controlled nuclear chain reaction at University of Chicago's Staff Field (CP-1).

Dec. 14 General Groves, Colonels Matthias and Nichols, and DuPont representatives developed the Hanford Site criteria.

Dec. 17 Colonel Matthias and DuPont engineers inspected the present Hanford location and reported to General Groves that it was the most favorable location examined.

Dec. 21 Contract signed with DuPont for engineering, design, construction and

operation of Hanford Engineering Works.

1943

Labor Relations – AF of L Workers agreed to Union conditions including 6 day workweek.

Jan. – Dec. Berkeley Cyclotron produced only 500 micro grams of plutonium through atomic bombardment.

Jan. General Groves visits location for Hanford Site. Appropriation of the properties begins.

640 square mile Hanford Site instituted by the Manhattan Engineer District of the Corps of Engineers for plutonium production. Work began on three reactors (B, D, and F) three chemical processing plants (B, T, and C [Never constructed, replaced with U]) to recover plutonium, 64 underground single shell waste storage tanks, fuel facilities, and 4,300 houses.

The magnitude of the original construction job can be envisaged by the 25 million cubic yards of earth that were moved during the original construction by nearly 2,000 dump trucks on the job and 437 locomotives ran on 160 miles of track while pulling 460 railroad cars. A bus system to transport workers from their barracks to widely scattered jobs inside the areas required 900 buses with a seating capacity of 30,300. There were 350 miles of highways constructed. Hanford's aggregate production plants (concrete) could turn out more than 1,000 tons of aggregate per hour.

Construction efforts for the Hanford Site were initially estimated to cost $230 million. It was later (9/20/44) revised to $398 million exclusive of the cost of the initial charge of metal (uranium fuel targets [elements])

Feb First man (Norman Fuller) to work at Hanford Site to acquire land – US Corps of Engineering – from Prosser, Washington.

Feb. 9 Hanford Site acquired (Richland, White Bluffs and Hanford townships Dissolved – 1500 people moved out).

Feb. 22 Project construction started, including Camp Hanford.

Mar. Construction of 554 buildings associated with Hanford Operations were initiated by Army Corps of Engineers (MED) and DuPont. Including North Richland cafeteria No. 1 (960 people/hour).

May 9 Mess Hall #1 opened (Closed 2/20/45)

Jun	1	First white women barracks opened. (57 built)
Jun	15	First white men (110 built) and colored men (21 built) barracks opened.
Jun		Initiated design for test pile (first Hanford reactor concept)
Jun		Initiated construction of T Plant canyon.
Jun.		Initiated construction on 4,000 homes in Richland to house approximately 17,500 people. (Completed in 1945).
Jul	1	One hundred twenty five tents in use for personnel.
Jul	6	Mess Hall #2 opened (Closed 9/3/44).
Jul		First local plant newspaper – "Sage Sentinel"
Jul		Initiated construction of B Plant canyon.
Jul		Initiated construction of fabrication facility for pile (reactor) graphite blocks.
Jul		White Bluffs warehouse opened (closed 2/10/45)
Jul		Pasco warehouse opened (Closed 8/18/44)
Aug.		51,000 workers living in temporary construction camp makes Hanford fourth largest city in Washington State.
Aug		Initiated design for canning reactor fuel targets (elements).
Aug		Initiated construction of U Plant canyon.
Aug		Initiated design for B, D, and F piles (reactors)
Aug		Initiated construction of B pile (reactor).
Sep	1	Riverland warehouse opened (Closed 6/6/44).
Sep	2	Mess Hall #3 opened (Closed 2/1/45)
Sep	2	First colored women barracks opened. (7 built)
Sep		Initiated construction of 313 Building canning facility.

Sep	13	Canteen warehouse opened (Closed 2/15/45)
Oct	5	Last personnel tent removed from service.
Oct.	6	First uranium received at Hanford Site.
Oct	31	Mess Hall #5 opened (Closed 2/20/45)
Nov	1	Moses Lake warehouse opened (Closed 12/19/44)
Nov	15	Kennewick warehouse opened (Closed 12/19/44).
Nov		Initiated construction of D pile.
Nov		Completed construction of graphite fabrication facility.
Dec	2	Mess Hall #4 opened (Closed 1/19/45)
Dec	10	Zillah warehouse opened (Closed 12/17/44).
Dec.	15	Initiated machining of uranium at Hanford.
Dec	27	Mess Hall #6 opened (Closed 11/11/44)
Dec		Initiated construction of F pile.

1944

		Army initiated operation of ferry at Hanford town site. (18 ft x 60 ft)
Jan.		Initiated loading uranium fuel rods for B Pile.
Feb	10	White Bluffs warehouse closed.
Feb	26	Mess Hall #7 opened (Closed 9/24/44)
Mar	4	First hutment (16 feet by 40 feet) opened. (10 people/hutment), 880 built.
Mar.		First formal arrangements for the testing of the Trinity device are made.
Apr	3	Mess Hall #8 opened (Closed 8/13/44)

Apr.	20	Initiated canning or uranium fuel elements.
May	11	First Hanford uranium canning line operational.
Jun		Began production of fuel elements in 300 Area.
Jun	1	B Pile (reactor) construction completed.
Jun	6	Riverland warehouse closed.
Jun.		Hanford reaches peak employment – approximately 48,000 workers.
Jul	15	First colored woman's barracks closed.
Jul.	23	Dedication of the B-17G, Flying Fortress, named "Days Pay" in recognition of the contributions of a day's salary from individual workers that purchased the aircraft for the Army Air Corps.
		The Health Instruments Section (H.I.) formed at Hanford. It's responsibilities centered in the radiological safety for workers. Due to strict security requirements, there was a prohibition on the information workers could have on radioactivity.
Aug	11	First white woman's barracks closed.
Aug	13	Mess Hall # 8 closed.
Aug	18	Pasco warehouse closed.
Sep	3	Mess Hall # 2 closed.
Sep	11	Mess Hall # 6 closed.
Sept.	13	First slug placed in Hanford 100-B pile.
Sep	14	First white men barracks closed.
Sept.	20	Hanford construction cost update went from $230 million to $398 million.
Sep	24	Mess Hall # 7 closed.
Sep	26	B pile (reactor) placed in operations followed by immediate discovery of xenon poisoning.
Sept.	27	B Reactor begins operation (Through Feb. 1968) at 11:50 PM with a design level of

250 MW. This is also Hanford Day #1. ("B Reactor Startup").

Oct	9	Last hutment (16 feet by 40 feet) closed. (10 people per hutment)
Oct	30	First colored men barracks closed.
Nov	28	First discharge of enriched uranium slugs from 100-B pile.
Dec.	4	First Hanford prepared enriched slugs received in 200-N area.
Dec.	5	Charging of the 100-D pile initiated.
Dec.	17	D Reactor begins operation (through June 1967) at 11:10 PM with a design power level of 250 MW.
Dec	17	Zillah warehouse closed.
Dec	19	Kennewick warehouse closed.
Dec	19	Moses Lake warehouse closed.
Dec		Corps of Engineers releases several hundred curies of Iodine 131 to the atmosphere.
Dec		Completed construction of 64 waste storage tanks in B, C, T and U Tank Farms.
Dec.	26	T Plant begins its chemical separations mission on reactor fuel using bismuth phosphate process (through August 1956).

1945

Jan. – Dec.		345,000 curies of I-131 released to the atmosphere at Hanford. (555,090 curies reported in PNWD-2222 dated May 1994)
Jan.	16	231-Z Operational (Plutonium from B and T Plants placed in final staging prior to being shipped off site).
Jan	19	Mess Hall #4 closed.
Feb	1	Mess Hall # 3 closed.
Feb	2	First plutonium resulting from Hanford Operations transferred to the Army. This established Hanford's ability to process raw material to finished product.
Feb.	2	Camp Hanford food mess hall closed.

Feb.	4	100-B pile (reactor) reached rated power level of 250 megawatts.
Feb	5	First shipment of Hanford plutonium delivered to Los Alamos for final processing and assembly.
Feb	10	White Bluffs warehouse closed.
Feb.	11	100-D pile (reactor) reached rated power level of 250 megawatts.
Feb	13	First charging of 100-F pile initiated.
Feb	15	Canteen warehouse closed.
Feb	17	Isolation of first Hanford plutonium started in 231-Z Building.
Feb.	19	Construction offices moved from Hanford to Richland.
Feb	20	C.E. Ganzel Barber Shop opened at a permanent location where it remains today.
Feb	20	Mess Halls # 1 and 5 closed.
Feb.	23	All personnel barracks vacated.
Feb.	25	100-F pile (reactor) placed into operation (through June 1965) at 3:00 PM with design power level of 250 MW.
Feb	28	Use of Pasco Hotel discontinued (guaranteed rental for rooms). During the time period used, 3516 persons used the available rooms.
Mar.	8	100-F (reactor) reaches rated power of 250 megawatts for about 24 hours after which power was reduced to 240 MWs.
Mar	8	First issue of weekly newspaper, **The Villager,** to a membership of 2000 people. See Page 138 for additional information.
Mar	15	Discharged first enriched uranium fuel slugs from 100-D pile.
Mar.	31	Construction of Hanford Engineer Works declared complete.
Apr	9	Richland library containing 5300 books was opened.
Apr.	10	B Plant deemed operational to begin the bismuth phosphate process.

Apr. 13 B Plant begins chemical separations using bismuth phosphate process (through October 1952 then converted to recovery cesium and strontium from liquid waste being sent to underground storage tanks).

May Meteorology program initiated at Hanford to predict dilution and dispersion considerations for the Hanford Site.

May 7 Armed forces of Germany surrender to Allies. At Alamogordo Bombing Range, 1000 curies of fission product from a Hanford slug used in test blast of 100-tons of TNT to determine potential effects of upcoming Trinity device test.

Jun. 16 Hanford plutonium used in Trinity device, tested at the Alamogordo Bombing Range, between 5:30 and 5:45 a.m., part of New Mexico known as Jornada del Muerto (Journey of Death). Also known as White Sands, New Mexico.

Aug. 5 Uranium used in LITTLE BOY device was exploded over Hiroshima, Japan. (bomb concept never tested).

Aug. 9 Hanford plutonium used in FAT MAN device was exploded over Nagasaki, Japan.

Aug. 14 Japan surrenders.

1946

Jan. – Dec. 76,000 curies of I-131 released to the atmosphere. (96,298 curies per PNWD-2222 dated May 1994)

Mar. 19 B Reactor placed in standby (restarted July 2, 1948). Reactor was held in standby status to conserve reactor life and assure the capability of producing polonium. At this time, the growth of reactor graphite was apparent and the solution was unknown.

Jun. 2 DuPont contract with Manhattan District expires 9 months after hostilities cease.

Jul. Completed BX Tank Farm.

Dec. 31 Armed Forces Special Weapons Project established (later named Defense Atomic Support Agency).

1947 – 1955

Hanford Post War Expansion. 28,000 workers begin construction on five new

reactors (C, DR, H, KW, and KE), two chemical processing plants (REDOX, PUREX), Plutonium Finishing Plant (PFP), 81 additional waste tanks, and 2,000 houses in Richland Washington, at an additional cost of $350 million.

1947

January - December 31,909 curies of I-131 released to atmosphere.

Jan 1 Graduate School for Nuclear Energy (GSNE) started by General Electric.

Jan. 1 Atomic Energy Commission (AEC) created as results of the Atomic Energy Act of 1946. AEC takes control of Hanford and other sites throughout the U. S.

Apr 1 Hanford Fire Station manned.

Dec 7 North Richland Cafeteria No. 2 began operations – 1440 people/hour

1948

Jan First reactor to use CO_2 in the reactor atmosphere.

Feb 3 White Bluffs Fire Station manned and Hanford Fire Station closed.

Mar 11 Fire Station 101 manned.

Mar. Completed TX Tank Farms.

Mar Construction of North Richland Cafeteria No. 3 initiated.

Apr 2 Construction of North Richland Cafeteria No. 3 stopped.

May 30 F Reactor experience the first fuel element failure. It was an eight-inch, solid, natural uranium fuel element that was removed from tube 1165. Failure was determined to be caused by an end cap. The element was charged on October 11, 1947.

Jul 2 B Reactor was restarted. Reactor had been in standby status since March 19, 1945.

Oct 18 200-W Fire Station manned.

1949

Mao Tse-tung's Communist Chinese forces victory over Nationalist Army.

Chinese – Soviet mutual assistance pact.

Feb. Hanford Atomic Metal Trades Council (HAMTC) certified by National Labor Board (NLRB).

Mar 3 Empire Air Lines initiated flights in and out of Pasco.

Mar 11 North Richland Cafeteria No. 1 closed.

Apr 24 Daylight saving time becomes effective in Richland, Wa.

Jul. 2 Z Plant (Plutonium Finishing Plant [PFP], 234-5Z) went on line.

Jul. 5 PFP Fabrication Facility started up.

Jul 5 PFP goes on line with rubber glove (RG) process equipment.

Aug. Operated first tritium extraction line.

Summer/ Autumn PFP-RG: Multiple airborne contamination spreads due to imbalances in ventilation and vacuum systems.

Sep The Soviet Union detonates its first atomic bomb.

Sep Densow's Drug Store opened on Wright Avenue.

Oct. 29 H Reactor (pile) goes into production (through April 21, 1965) with a nameplate design power level of 400 MW.

Oct. C Plant (Hot Semi-Works) went operational.

Dec. 2 "Green Run Experiment", estimated 5,500 curies of Iodine 131 released to the atmosphere from the Hanford Site. See additional information on page 40.

Winter PFP-RG: Urine samples of operators indicate a "two-fold" increase over other plant operating personnel.

1950

Jan. President Truman approved development of the hydrogen (fusion) bombs.

Alger Hiss convicted of espionage.

Feb. Senator Joseph McCarthy begins "investigating" communists in government and

industry.

Mar 14 The Villager newspaper sold to Columbia Basin Publishers, Inc of Pasco.

Jun 10 Initiated irradiation of lithium-aluminum target elements supported by oralloy for the production of tritium. Program (1st campaign) completed in September 1951.

Jun 25 North Korea crosses the 38th parallel (Korean War begins).

Oct. 3 DR Reactor goes into production (through 1964) with a design power level of 250 MW. This reactor was constructed, as a replacement for the D Reactor, with no water plant facilities. It was later decided to operate both reactors using D Reactor's water plant facilities

Late in 1950, operation of the reactors at a specified nominal level was discontinued permitting operation at the highest levels attainable within approved operating limitations. At this time, power levels at the initial three reactors (B, D, F) ranged from 130% to 150% of nameplate design level.

1951

Jan. PFP-RG: Two operators sprayed with contaminated acid solution while attempting to air sparge equipment in a hood

Feb. Completed 12 waste storage tanks in S Farm.

May 1 West Evaporator became operational (shut down July 1955).

Jun. Hanford tritium program terminated.

Sep 24 Discharged lithium target elements from H Reactor which were charged on June 10, 1950 from the production of tritium. Thirteen of the lithium target elements failed during irradiation. The tritium was separated at Building 108-B in an especially designed facility.

Nov. Violent reaction occurred in a reduction hood while lathe turnings were being combined with other materials in preparation for reduction. Contamination spread throughout the hood. (P-11 criticality accident.)

1952

Jan. 4 Hanford tritium production resumes. (2nd campaign)

Jan. 9 REDOX Plant begins operation as the world's first nuclear solvent extraction plant using the reduction-oxidation process (through July 1, 1967).

Jan.		PFP-RG: Fire occurred in Task I hood.
Feb.		Started metal removal in "U" Tank Farm.
Feb.		PFP-RG: Employee received a hand wound contaminated with plutonium when a hood glove and an inner surgeon's glove ruptured during maintenance work.
Feb		PFP-Lab Room 152: Explosion occurred in a four-liter bottle of nitric acid and acetone wash solution in a sample laboratory hood. Hood and room floor grossly contaminated due to hood access door being left slightly open.
Mar.	18	PFP-RMA: Remote Mechanical Line – "A" operational.
Mar.		PFP-RG: Reaction vessel failed in Task II hood. "Gross plutonium contamination" was spread outside the hood in Room 231. Room could not be occupied (except by decontamination personnel) for three weeks.
Apr.		Completed 6 waste storage tanks in TY Farm.
May		Started construction of RMB (Remote Mechanical Line – "B") at PFP but was not placed into operation.
Jun.		Last fuel charge at B Plant.
Jul.		U plant (TBP or Metal Recovery Mission) begins operations.
Jul.		Strontium Semi-Works on line as pilot plant for REDOX and PUREX processes (through July 1956).
Aug.		Completed processing last charged processing at B Plant. Initiated placement of B Plant in layaway August 9, 1957.
Aug.		PFP-Lab: Fire occurred in sample laboratory hood.
Oct.		Completed B Plant layaway activities (discontinued separation operations).
Oct.	31	First full-scale thermonuclear explosion ("Mike") conducted at the AEC's Eniwetok Proving Ground in the Pacific Ocean.
Nov.		Tritium production activities terminated.
Nov.	1	TBP Plant initiated removal of uranium from Tank Farms tanks.

Nov. 3 UO3 Plant goes on line for uranium recovery (through July 1957).

Nov 16 Initiated installation of the Ball 3X safety system in F Reactor. Hoppers holding 3/8" diameter boron-steel balls were installed at the top of the reactor and connected to the vertical safety rod channels. Under emergency conditions, hopper gates automatically opened permitting gravity flow of the balls into Vertical Safety Rod (VSR) channels. This provides a second safety system assuring reactor shutdown under emergency conditions (graphite distortion) when VSRs could not enter the reactor.

Nov. 18 C Reactor goes into production (through April 25, 1969).

Nov PFP-Met Lab: Gross contamination event occurred in main room. Lab operations suspended for two weeks for cleanup.

Dec 13 East Evaporator began operation.

1953

Feb. PFP-RMA: Task II furnace door was ejected onto a hood floor, spilling the entire run of liquid hydrogen fluoride in the furnace.

Mar. PFP-RMA: A pressure surge in a Task II furnace expelled the furnace door and the filter boat containing fluoride powder. Hood contaminated.

Apr 7 Initiated irradiation of lithium-aluminum target elements (3.5% Li by weight) in the DR Reactor for the production of tritium. Program completed during March 1955.

Jul 1 Seismoscope placed in operation and connected to the No. 1 safety circuit. The seismoscope had two functions: 1) to detect a slight tremor and give an alarm in the control room, and 2) to detect an earth tremor of damaging intensity and trip the No. 1 safety circuit.

Aug Soviets explode first hydrogen bomb.

Sept. PFP-RMA: An alcohol vapor explosion occurred in a Task III hood. Reduction operations in the RMA Line were halted for two weeks, and all reductions were performed in the RG Line during that time.

Oct. PFP-RMA: Air balance between Zone 4 (inside hood) and Zone 3 (room air) while changing panels on a machining hood in Room 233. Room contaminated and production was delayed 24 hours.

Nov PFP-Met Lab: Operator sustained contaminated puncture wound while working in

hood gloves.

Dec PFP-Ana Lab: Explosion in hood involved five operators in a wide spread contamination.

Dec Shipped the first lithium-aluminum target elements from the DR Reactor to the Building 108-B for the extraction of tritium.

1954

Jan 25 C Reactor discharged first of low exposure metal (four ton), requested by the AEC, was made at about one-third of the 625 MWD/T goal.

May PFP-Met Lab: Violent reaction and flash fire occurred when chemist attempted to dissolve plutonium metal turnings in nitric acid. Pressure increased in hood forcing plutonium contamination out into Room 179. Two chemists received skin contaminations.

July PFP-RMA: Serious plutonium metal turnings' fire in a lathe hood stopped Tasks IV and V for three weeks. Button fabrication (Tasks I-III) continued.

Aug Initiated irradiation of thorium for the production of U-233. Completed the program during October 1955. About 16,000 equivalent megawatt days were charged to the irradiation.

Oct Shutdown East Evaporator.

Oct DR Reactor achieved 49.8 days of continuous operations, a record for a Hanford reactor.

Dec PFP-RMA: An operator received exposure to air borne contamination during a material transfer.

Dec. PFP-RMA: Hydrogen explosion occurred in a Task II hood, blowing off a furnace door.

1955

Nikita Khrushchev came to power in USSR.

Passage of the Atomic Energy Act of 1954.

231-Z initiated fabrication of experimental nuclear devices (Project Whitney).

Jan. 4 KW Reactor goes into production (through February 1, 1970) at 8:47 AM with a nameplate design power level of 1850 MW.

Jan 5 KW Reactor shutdown at 2:04 AM due to fuel element failures resulting from a coolant stoppage at the real pigtail of tube 4669. The stoppage resulted from a plug not being removed during the start-up static pressure tests on the delta-scale instrument and it incorrectly inferred an indicate flow. Reactor resume operations on March 11, 1955 after drilling a six-inch opening through the rear shield to replace the pressure tube and tube bearing graphite blocks.

Apr. 17 KE Reactor goes into production at 3:39 PM (through January 29, 1971) with a nameplate power level of 1850 MW.

May PFP-RMA: Mechanic received contaminated puncture wound while cleaning a jet in a Task I hood.

June PFP-RMA: Operator received internal dose of plutonium when a Task II hood glove ruptured.

June PFP-RMA: Operators exceeded permissible batch size when they jetted Task II recycle waste into a can already containing an acid flush from hood equipment.

June PFP-RMA: A less serious over-batch incident occurred in Task I.

July PFP-RMA: Sudden over-pressurization of a furnace occurred in Task II, resulting in the "rapid ejection" of the furnace door. Six batches of powder were spilled on the hood floor.

Jul. West Evaporator (242-T) shutdown restarted December 3, 1965.

Jul. 1 RECUPLEX begins operations at PFP (through April 1962).

Aug PFP-Ana Lab: Lab Tech received plutonium deposition from broken contaminated glass.

Aug 8 Shipment of "J" metal from the DR Reactor to Arco, Idaho (Idaho National Engineering and Ecology Laboratory [INEEL]).

Sep. PFP-RMA: An operator inhaled plutonium while handling an improperly sealed contaminated bag of crucible fragments.

Sep PFP-Met Lab: Plutonium metal fire occurred.

Sep PFP-Met Lab: Plutonium metal fire occurred.

Oct PFP-Ana Lab: contamination spread in several laboratory rooms, corridors and women's locker room.

Oct PFP-Ana Lab: Worker received internal deposition of plutonium from improperly handling of a process sample. Room Floors also contaminated.

Nov: Formation of Joint Army – Navy Ballistic Missile Committee to develop intercontinental ballistic missiles (ICBM).

Nov PFP-RMA: Operator spread contamination in 234-5Z corridor, vehicle and burial ground due to failure to properly survey self after removing waste cartons from storage

Dec. Completed 6 waste storage tanks in A Farm.

Dec. PFP-RMA: A Task III rupture disc ruptured when hydrogen fluoride and water was absorbed in a plutonium tetrafluoride charge.

1956

Some Hanford Site single shell waste tanks (SST) began leaking into the surrounding soil. Over 66 of the SSTs are assumed leakers. No Double Shell Waste Tanks (DST) have leaked.

Jan. 12 PUREX goes on line (through June 1972) to process irradiated fuel elements.

Jan. PFP-RMA: Operator's leg was contaminated (high level) when an improperly packaged waste container leaked.

Jan. PFP-RMA: Operators were exposed to airborne contamination when plutonium dust escaped from a hood's flange.

Feb. Last fuel run charged at T Plant.

Mar. Completed construction of 15 waste storage tanks in SX Farm.

Mar. 20 Last run loaded out at T Plant.

Mar. PFP-RMA: Task III furnace door ejected when plutonium chips oxidized while undergoing hydrofluorination. Fire accompanied the ejection, and burning particles were dispersed around the hood.

Apr. Initiated filling of 107-SX Waste Tank.

May		PFP-RMA: An "uncontrolled chemical reaction" occurred in Task I, causing a spread of plutonium contamination.
Jul.		Strontium Semi-Works shutdown for cleanup and modifications until July 1960 restart.
Aug.		T Plant off line.
Aug		PFP-RMA: Operator received internal deposition of soluble plutonium from an airborne contamination release while transferring packaged slag and crucible cans to a larger plastic bag.
Sep		Hanford Laboratory formed for research and development.
Oct.	9	UO-3 continuous calciners became operational.

1957

Jan.		T Plant goes on line for a special decontamination project.
		Last Pu out of 231-Z and plant in stand-by-mode.
		Operations in 231-Z Isolation Building discontinued.
Mar.		Completed recovery of uranium from waste tanks and terminated TBP uranium recovery operations.
Jul.		UO-3 Plant goes on line to produce powdered uranium oxide.
Jul.	1	Transferred Richland municipal, business and residential facilities from government management to city ownership.
Aug.	1	Hood 9B at PFP operational.
Aug.	8	Initiated Neptunium recovery at PUREX.
Aug.	9	B & T Plants lay away completed.
		T Plant comes back on line as a decontamination facility.
		Removed and laid away metal facilities in "U" Tank Farm.
Nov.	12	Near criticality in Hood 9B of the 234-5Z building.

Dec PFP-RMA: Two major contamination spreads occurred in Task III, resulting in four lost days of production.

1958

Jan 31 Reactor power level limits were recommended by the Advisory Committee for Reactor Safety and approved by the AEC:

B, D, DR, F and H	1440 MW
C	1740 MW
KE and KW	3140 MW

Jun. Started second cycle at PUREX.

Jul. PFP-RMA: Hood 9A placed into operations.

Jul. 1 Graduate Center transferred from AEC Contractor to University of Washington

Aug. First Waste Tank (113-SX) failure detected.

Aug. 7 Neptunium Recovery initiated at PUREX.

Aug. PFP-RMA: Fire occurred inside glove box when briquetted plutonium chips oxidized.

Dec. Started "E" metal through REDOX

Dec. 10 City of Richland re-incorporated.

Dec. PFP-RMA: Operators dropped plastic bag containing removed sections of used 26-inch vacuum line. Contamination spread in corridor and 500 feet of outside area leading to a burial box.

1959

Radionuclides from Hanford Operations discovered in shellfish in Willapa Bay, Washington and Tillamook Bay, Oregon.

Jan 16 Reactors maximum power level limits approved to the following:

B, D, DR, F, and H	1900 MW
C	2100 MW
KE and KW	4000 MW

Jan 16 F Reactor achieved 50.4 days of continuous operation, a new record.

Mar		PFP-Ana Lab: Fire in hood containing plutonium occurred due to overheated flammable oil.
Mar		PFP-Ana Lab: Explosion inside hood during machining operations contaminated entire room.
Apr		Completed the KAPL–120 experimental test loop installation in the H Reactor.
May	13	N Reactor construction begins (completed March 1964)
Jun		PFP-Ana Lab: Lab Tech's face sprayed with dilute solution of plutonium nitrate when sample vial pressurized.
Jul		PFP-RMC: Construction completed.
Aug		106-TY Waste Tank failed and removed from service.
Nov.		Waste Tank 101-U failed and removed from service.
Nov.	30	U Plant-REDOX initiated Neptunium recovery.

1960

Jan		John F. Kennedy became president of United States.
Jul.	21	PFP-RMC: Remote Mechanical C-Line operational with hot feed.
Jul	21	100 Area Fire Station manned.
Jul	21	White Bluffs Fire Station closed.
Sept.	28	Strontium Semi-Works begins strontium recover and purification (through July 1967).
Nov.	21	PRTR and PFPP, small test facilities in the 300 Area (308 Bldg), began operations.

1961

Reactor maximum power levels increased as follows:

Jan	9	B, D, DR, and F	2090 MW
Jan	9	C	2310 M
Jan	18	H	2090 MW
Jan	22	KW	4400 MW
Jan	24	KE	4400 MW

Jul. 21 PRTR: Achieves full power.

1962

Jan. 5 PFP-Incinerator: Initiated hot (plutonium based) feed processing.

Mar. PFP-RMA: Vacuum system experienced irregular operations after 40 liters of plutonium nitrate were drawn into the vacuum system from the Task I product feed system.

Mar. PFP-RMA: Operators spread contamination into Zone 1 of the 234-5Z Building during removal of old Task I equipment.

Mar. PFP-RMA: A condenser on a plutonium oxide dissolver plugged, spreading contamination.

Apr. 7 PFP-RECUPLEX: Shut down due to CRITICALITY.

May PFP-RMA: Two operators inhaled plutonium when a glove ruptured on a skull burning hood.

June PFP-RMA: Pipefitter received significant plutonium deposition when he punctured his finger with a plutonium nitrate contaminated wire.

Oct. 23 PFP: Started Ion Exchange for handling button line filtrate.

1963

Federal Building, Richland construction was completed.

AEC-HQ changed Hanford Operations Office to Richland Operations Office.

Apr. 16 PUREX-Q cell: Neptunium purification operations initiated.

Apr PFP-RMA: A Task III furnace overheated and discharged slag from a pressure vessel to the hood. A small fire accompanied the incident and two hood gloves were damaged.

Jul. Completed Phase I of three phases to convert B Plant to fission product recovery and waste management.

Aug. 2 B Plant receives hot fission product feed.

Sept. First production test of hot-die-sized fuel charged in C Reactor.

Sept. 26 Washington Public Power Supply System begins construction of Hanford Generating Plant next to N Reactor (completed and operating April 1966).

Nov 6 233-S fire in anion exchange resin caused neptunium recovery to be halted. REDOX (S Plant) operations halted.

Nov PFP-RMC: Fire occurred in a Room 227 glove box.

Dec 2 Reactor maximum power level limited to the following:

B	1940 MW
C	2310 MW
D	2005 MW
DR	1925 MW
F	1935 MW
H	1955 MW
KE/KW	4400 MW

Dec 20 REDOX restarted following 233-S fire.

Dec 31 N-Reactor begins production.

1964

Jan. President Johnson announces cutback in nuclear materials production.

Feb 18 Maximum power level limit relaxed to 2090 MW and 93.5 °C.

Feb 24 Bulk outlet water temperature limit raised to 95°C.

Mar. 3 PFP-PRF: Plutonium Reclamation Facility initiated chemical run.

Mar 16 Tank 107-SX confirmed to be a leaker.

Apr. 30 Stopped filling of 107-SX with liquid waste.

May 6 PFP-PRF: Initiated operations with hot feed.

Jun PFP-PRF: Construction completed on PRF (236-Z).

Jun PFP-Ana Lab: Package of unoxidized plutonium chips oxidized rapidly when added to dissolver inside hood. Hood was pressurized, spraying contamination into the hood, Room 149 adjacent laboratory areas, 234-5 Building roof vents and some surrounding ground area.

Jul	29	300 Area Fire Station manned.
Aug	6	Waste (including Phase I Americium) and miscellaneous treated operation initiated at PFP.
Aug	12	200 Area Fire Station manned.
Aug	12	200-W Fire Station closed.
Sept.	9	First Americium recovered (7.6 grams)
Nov.		4 waste tanks in AX Tank Farms began operations.
Nov.	9	N Reactor goes into production.

1965

Jan.	4	Battelle-Pacific Northwest Laboratory comes to Hanford and assumes responsibility for Hanford Laboratories.
Jan	5	In-tank solidification unit started in Tank 101-BY. Circulation assembly broke. System shutdown for repairs.
Feb.		PUREX completed a 45 day test to process irradiated thoria fuel for recovery of U-233 and thorium.
		Four (4) waste tanks at SX Farm completed.
Mar	19	Solidification unit in waste tank 101-BY repaired and placed into operations.
Mar.		Waste tank 115-SX determined to be a leaker and removed from service.
May		Americium recovery added to PFP.
Oct.		N Reactor reached full power (4000 megawatts).
Dec.	3	Restarted West Evaporator (242-T), shutdown April 9, 1976.
Dec.	31	PFP-RMA: Weapons fabrication facility shutdown.

1966

Feb.	17	"E" metal processing at PUREX initiated.

Mar. – Apr.		REDOX processes first production campaign (120 tons) of New Production Reactor (NPR) zircaloy – clad 94 metal.
Apr.	8	First electricity produced at Hanford Generating Plant.
Jul	8-9	All reactors (B, C, D, KE, and KW) had to be shutdown because of a strike by the Hanford Atomic Metal Trades Council (HAMTC) against two Hanford contractors – ITT/FSS and BNW. KE was on scheduled outage when strike began.
Aug.	25	Strike by HAMTC resolve at Hanford and B, C, D, KE and KW reactors return to operations.
Nov		PFP-Ana Lab: Fire in Room 143 when nitric acid covered paper ignited.

1967

Jan.		Started blending and casting Pu ingots for ZPPR.
		REDOX stopped processing fuel.
Jan.	7	President Johnson announces a decrease in the need for SNM.
Jan.	23	Hanford selected as site for Fast Flux Test Reactor (FFTF).
Mar.	3	First ZPPR shipment to Rocky Flats.
Apr.		REDOX shutdown.
Apr.	19	Initiated shipments of depleted UO-3 to Puducah, Ohio.
Jun	26	D Reactor shutdown for deactivation at 1402 hours.
Jul.	1	REDOX layaway completed.
Aug.		PFP-Ana Lab: Hood condenser's water line ruptured, spreading contamination in Rooms 148, 152, 153 and a corridor in the analytical laboratory, and onto the ground outside the 234-5 Building.
Sept.	1	Strike at N Reactor (0215 hours)
Sept.	4	Transferred Isochem, Inc. site responsibility to ARHCO.
Dec.		Initiated 244-AR Vault operations.

Dec 18 Received five containers of Hallam Reactor sodium (555,000 lbs.) in 200 West Area.

Dec 27 B Plant: Initiated Cesium separations.

1968 – 1978

B Plant's Cesium-137 and Strontium-90 recovery mission was largest single chemical extraction campaign for the Hanford Site.

1968 – 1986

28 double shell tanks (DSTs) were built to contain high-level waste.

1968

Life Sciences laborstory construction begins, with initial operation 1970. And Land Ecology Reserve established.

B Plant renovated for encapsulation mission.

Jan 18 AEC announced that B reactor would be deactivated in mid-February.

Jan 31 Initiated Strontium separations at B Plant.

Feb 12 B Reactor, the world's first plutonium production unit was deactivated. Fuel discharged was completed on February 18 and coolant flow was discontinued on February 22.

1969

231-Z fabricated devices for the Nevada Test Program and provided support to Rocky Flats Plant following one of their fires.

Feb PFP-RMC: Fire occurred in a furnace when an electrical power supply line failed causing a short circuit. Contamination was contained within the hood.

1970

Jul FFTF construction begins with site preparation work.

1971

Jan Construction begins on Waste Encapsulation and Storage Facility (initial cold

operation June 1, 1973, initial hot operation, October 1974).

Jan. 28 President Nixon orders all funding cut for materials production at Hanford, closing both N and K reactors.

Apr. Nixon Administration agrees to continue dual-purpose operations at N Reactor under modified reimbursement arrangement, which included payment $20 million from Washington Public Power Supply System to pay for N Reactor operations as an electrical producer for three years.

May Startup of first two double-wall tanks (AY Tank Farm).

Aug. Operations for electrical generation begin again at N Reactor.

1972

Jan. Americium-241 (Am^{241}) determined by gamma energy analysis was initiated, replacing the alpha energy method.

Jan. 31 Radiation Protection Technologist (RPT) responsibilities from 1100 area transferred from Battelle to ARHCO.

Jun. PUREX enters standby mode and begins upgrade program until November 4, 1983 restart.

Jun PFP-RMC: Operator received plutonium contamination from a finger puncture wound when the hood's glove and the operator's surgeon glove ruptured during clean out operations.

Sept. PNL Life Sciences laboratory dedicated.

Sept. 25 Initiated reprocessing of Polystyrene Cubes in the new Miscellaneous Treatment (MT) Hood 4, Plutonium Fishing Plant (PFP), and Plutonium Reclamation Plant (PRP).

1973

Jan PFP-RMA: Operator received skin contamination (neck and face) while removing plutonium oxide from a hood.

Jun. 8 241-T-106 Tank confirmed leaking (115,000 gallons).

Jun PFP-RMC: Two maintenance craftsmen received lung, face and hair contamination when their hood gloves failed while repairing a crucible cutter.

Nov. 1 242-S Evaporator started up.

Dec. 1 Major effort to upgrade waste storage underway with completion of third double-shell tank.

1974

Feb PFP-Ana Lab: Three persons exposed to airborne contamination when they entered Room 166 without wearing a mask. Mask required for the operations being performed.

Aug. 29 Waste Encapsulation and Storage Facility (WESF) began hot operations with 9 curies of Cesium-137.

1975

Jan PFP-RMA: Operator dropped a small bottle containing plutonium nitrate while removing it from the hood. Hood port and operator's clothing were contaminated.

Jul PFP-Ana Lab: dissolved PRF centrifuge sludge in a four-liter bottle leaked through the bottle and the surrounding plastic bag onto the hood floor and Room 179-B floor. The solution contained nitric acid and hydrofluoric acid contaminated with plutonium.

Nov PFP-RMA: Operator was exposed to airborne plutonium contamination and received plutonium contamination on his clothing when a glove ruptured during maintenance of a hood.

1976

2424-S Waste Evaporator begins operations.

Apr. 9 Shutdown West Evaporator (242-T).

May 10 B Reactor dedicated as a National Historic Mechanical Engineering Landmark by the American Society of Mechanical Engineers.

Aug. 30 Worker Harold McClusky contaminated with Americium in an accident at PFP, initiating first use of the HEHF decontamination facility.

Nov. 16 Hanford Site established as a National Environmental Research Park (dedicated March 18, 1977).

Dec. 10 Two double shelled tanks 102-AZ placed into operation.

1977

Mar. 18 242-A Evaporator – Crystallizer began operations.

May FFTF Visitors Center opens.

1978

May 231-Z began phase out of Division of Military Applications Programs and Device Fabrication.

Aug. Began filling FFTF cooling system with sodium.

Nov. Fuels and materials Examination Facility construction begins (completed Nov. 1984). Also known as Fuel Cycle Plant.

Dec. FFTF construction complete.

1979

Feb. Battelle-PNL successfully demonstrates vitirfication of high-level radioactive wastes from commercial nuclear fuel elements.

Jun. FFTF fuel loaded for the first time.

Jun. 19 Technical Program Plan for Basalt Isolation Project (BWIP) issued, followed by public meetings in the Northwest.

Aug. FFTF goes critical for first time.

Sep PFP-RMA: A valve in Room 227 leaked plutonium nitrate, which caused contamination to spread in the room.

Oct. Maintenance and Storage Facility (supporting FFTF) construction begins (completed Oct. 1982).

Oct. 2 B, C, KE and KW reactors moved from standby to retired status.

Oct PFP-RMA: Hood glove was cut by hand tools being used in the hood which allowed contamination to spread to the clean side of the glove, the worker's wrist and

two other operators' clothing.

Nov PFP-RMA: Four operators' clothing became contaminated when a polyethylene bag used to seal a can of plutonium oxide failed. The contamination spread onto the working table and the floor in Room 232-A.

1980

Feb. 9 FFTF critical power for first time.

Feb. 22 Fusion Materials Irradiation test Facility ground breaking. Funding for structure later canceled and never built.

Nov. 21 Began removal of the 149 single shell tanks from active service.

1981

Completed construction of seven double shell waste storage tanks at the AN Farm.

1982

Began transfer of PNNL operations within the 231-Z facility to the 3000 Area.

Apr. 16 FFTF begins first major operating cycle.

Apr. 30 FFTF formally dedicated.

1983

The 231-Z facility transferred from PNNL to Rockwell Hanford Operations.

Jan. 9 Nuclear Waste Policy passed. Requires BWIP to meet NRC licensing requirements.

Sept. Cesium recovery completed at B Plant.

Nov. 4 PUREX restarted after standby since 1972.

1984

Jan. PFP resumes full production

Jan. 25 An unusual stack emission at PUREX sparks an investigation.

1985

Jan PFP-RMC: A waste package pressurized and was venting fumes into a room was placed in a C-Line hood to provide controlled storage. Some contamination was spread inside the hood.

Feb Strontium recovery completed at B Plant.

Mar PFP-Ana Lab: Chemical technician hands' contaminated when a vial of plutonium/americium solution ruptured during capping.

Jul 1 Fire Station administrative offices moved to 200 Area from 100 Area.

Aug PFP-RMC: Product solution overflowed into the 26 inch vacuum system when operators failed to vent the vacuum supply shut off system after loading the solution into a hood by vacuum transfer.

Aug PFP-RMC: A water supplier furnace-cooling coil within a hood sprang a pinhole leak during operations. Smoke was emitted and contaminated water ran out the bottom of the hood contaminating the room's floor.

Sep PFP-RMC: Fire occurred in a Task II hood when a plastic handle tool that was left on the calciner melted and caught fire following calciner started up. The fire was confined to the hood.

Sep PFP-RMC: An over batch incident occurred in a Task I hood and on the C-Line conveyor belt.

Dec PFP-RMA: Pipefitter received skin contamination and a minor lung deposition of plutonium when his respirator became plugged during a hood clean out in Room 323.

1986

Feb. 27 40 years of environment data released to the public.

Mar PFP-RMC: Sprinkler water became contaminated when it was spread throughout a Task III hood and onto Rooms 227, 228-A, B, C, and 230-A floor when the hood's induction furnace was placed too close to a sprinkler head.

Apr 28 Chernobyl accident in Soviet Union draws attention to N Reactor.

Apr PFP-RMC: Hydrogen floride leaked into Task II hood (middle section) and subsequently into the E-4 exhaust system (liquid state), thus causing hood filter

failures.

Apr PFP-RMC: Two millwrights received finger puncture wounds (plutonium contamination) during replacement of Task II hood filters.

May 28 BWIP nominated as one of three sites to be characterized for the nation's first repository for commercial high-level nuclear waste.

May PFP-RMC: An instrument technician became contaminated (face, hair, neck, and chest) while servicing a hood sensing line.

July PFP-RMC: Liquid material containing plutonium from a Task I hood floor was drawn into the 26 inch vacuum system when the receiver tanks overflowed. Production stopped while liquid was removed from vacuum system.

Aug PFP-RMC: Water backed up into the scrubber exhaust system of a hood in Room 235-A3, then flowed into the hood and into the rooms floor drain. Incident caused by operator error during work being performed on the scrubber system.

Oct. 8 DOE shutdown PUREX and PFP in response to Sept 29, 1986, incident (PUREX restarts February 21, 1987, along with parts of PFP).

Dec. 12 DOE announces N Reactor stand down for six months for safety enhancements.

1987

Feb. 21 PUREX restarts.

Jul. 8 Initiated PFP's Plutonium Reclamation Facility operations (through December 22, 1987).

Sep 14 400 Area (FFTF) Fire Station manned.

Dec. 22 Nuclear Waste Policy Act amended, BWIP terminated.

1988

First American-Soviet agreement to reduce nuclear arms – Intermediate Nuclear Forces (INF) treaty.

Hanford Environmental Dose Reconstruction (HEDR) Project began.

Feb. 16 DOE announces N Reactor to be placed on cold standby.

Jul. 11 PFP's Remote Mechanical C line restarted.

Nov PFP-RMC: Process hot plates were left on in a feed preparation hood causing a limited volume sprinkler system and a fire alarm to activate. Contamination spread was contained within the hood.

1989

Hanford Thyroid Disease Study began

Preliminary Environmental Survey of Defense Production facilities ("2010" Report) began.

May Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement or TPA) was signed by US DOE, US Environmental Protection Agency and Washington State Department of Ecology.

Aug. Secretary of Energy (James D. Watkins) designated Hanford site as the "flagship" of DOE's environmental restoration efforts.

Oct. Study of the Hanford Reach for designation as a Wild and Scenic River begins.

Oct N Reactor permanently shutdown

1990

346 billion gallons of liquid waste have been disposed to the 200 Areas soils to date.

Over 400 billion gallons of liquid waste have been disposed to the Hanford soils to date.

1992

Feb. 12 Declassified and released all Hanford production information for Pu, Tritium, and rare gases (Xenon and Krypton).

Sept. 23 Last nuclear weapon tested (DIVIDER) at Nevada Test Site, completing a total of 1054 tests (U.S. –1030, U.S./U.K. – 24) and 2 combat weapons over Japan.

1997

Jun PUREX permanently deactivated. All activities within the entire facility were terminated and no personnel inhabit the facility. Minimum airflow through the

facility is maintained for contamination control. Facility is awaiting final decision on decontamination and decommission.

GREEN RUN Release

In December 1949, about 5000 curies (some reports state 7000) of Iodine-131 were released from the Hanford site as part of a classified experiment. The following is information that was released in the 1970 time frame.

Highlights of Green Run

- December 1949, 5000 curies (7000 stated in some reports) of Iodine–131 were released from a 60 meter stack of a separations plant as part of a classified experiment.
- The source of the Iodine-131 was "green fuel" which was being reprocessed to obtain weapons material.
- Green fuel is that material which had only shortly been removed from the reactor and the short lived fission product (Iodine-131 and others) have not had time to decay out.
- Fuel used in"Green Run" was estimated as having decayed about 16 days. Practices in 1949 were to have a 90 days or more decay/cooling period. Current practice allow a decay/cooling period of 180 days or greater.
- Iodine–131 has an 8.08 day half life. The "green run" fuel used had an iodine concentration of 1,750 greater than the fuel normally used in 1949 and 7.79 +E 07 more than the fuel reprocessed today based on decay loss calculations.
- operations personnel were reportedly unaware of the event and only that green fuel was being processed. The use of green fuel was rumored to be related to the plants being behind on production quotas.

Iodine Pathways

- Iodine concentrates in the thyroid of mammals and a significant proportion can also travel through the body in blood or be considered to be in the body bank.
- The two main routes of entry are ingestion of food products and inhalation.
- Primary pathway is, pasture - cow - milk - human thyroid. Secondary pathways are, inhalation and the ingestion of unwashed vegetables and fruit.
- The iodine is deposited (fallout) on the surfaces of vegetation and is not generally incorporated into the vegetative mass. It can be washed off by rain or in the kitchen.
- The primary milk sheds in the impacted area center around Yakima, Walla Walla and possibly the Kittitas Valley. Home milk cows may also have been a pathway.
- Milk producing animals in these areas would derive their main fodder from stored/protected hay. The pasture probably would have been too poor by December to be a major pathway.
- At this time of the year there would be no locally grown fresh vegetables in the diet.

Monitoring and Dose Evaluation

- 5,000 curies (7000 in some reports) iodine was released from a sixty meter stack of one of the reprocessing plants in early December 1949, over a period of two days.
- Over 1,365 vegetation samples were collected over eastern Oregon and Washington.
- The Hanford Environment Dose Reconstruction Project (HEDR) evaluated the sample results.
- Over 40,000 pages concerning the release of iodine–131 have been released to the public domain in response to FOIA requests and the DOE's open public release policy. (ARH-3026 and HW-17381 dated May 1, 1950, "Dissolving of Twenty Day Metal at Hanford").

RESPONSIBLE CONTRACTORS

1942, Dec. 21	E. I. DuPont de Nemours & Company joins with U.S. Army Corps of Engineers to construct and operate Manhattan Project Atomic Plant.
1946, Sept. 1	General Electric Company, which is replaced by multiple contractors under segmentation/diversification program during 1965-1966 time frame.
1953, June 1	J. A. Jones Construction
1953, May 15	Hanford Engineering Services (HES) - Vitro Engineers
1965, Jan. 1	U.S. Testing - bioassay and environmental sample testing.
1965, Jan. 4	Battelle Memorial Institute (BMI)- research and development, takes over from Hanford Laboratory, renamed Pacific Northwest Laboratory (PNL). Later changed to Pacific Northwest National Laboratory (PNNL)
1965, July 1	Computer Sciences Corporation (CSC)
1965, Aug. 1	Hanford Occupational Health Foundation (HOHF) - industrial medicine
1965, Sept. 10	Douglas United Nuclear, Inc. (DUN) - Reactor operations, fuel fabrication.
1966, Jan. 1	Isochem - chemical processing.
1966, Mar. 1	ITT Federal Support Services, Inc.(ITT/FSS) - support services.
1967, July 1	DUN takes over N Reactor from General Electric.
1967, Sept.4	Atlantic Richfield Hanford Company (ARHCO) replaces Isochem.
1967, Aug. 8	HOHF changes name to Hanford Environment Health Foundation (HEHF).
1970, Feb. 1	Westinghouse's Hanford Engineering Development Laboratory
1971, Sept.	ARHCO takes over support services from ITT/FSS
1973, April	DUN changes name to United Nuclear Industries, Inc.
1975, Oct.	Boeing Computer Services replaces CSC.
1977, Oct. 1	Rockwell Hanford Operations replaces ARHCO.

1981, June — Braun Hanford Company replaces Vitro Engineering Corporation

1982, March — Kaiser Engineering Hanford (KEH) Company (replaces Braun Hanford Company) as architect and engineering contractor

1985, March — Consolidation of contractors plan announced by DOE.

1987, March 1 — Kaiser Engineers takes over consolidated engineering/construction contract, encompassing previous J.A. Jones responsibilities.

1987, June 29 — Westinghouse Hanford Company (WHC) becomes sole operations and engineering contractor replacing Rockwell Hanford Operations (RHO), United Nuclear Company (UNC) and Kaiser Engineering Hanford (KEH).

1996, Oct. 1 — Fluor Daniel Hanford, Inc., (FDH) replaces WHC. FDH comprised of 13 subcontract companies as follows:

- B&W Hanford Company (BWHC)
- Duke Engineering & Services, Inc. (DESI)
- Rust Federal Services of Hanford, Inc. (RFSH)
- Lockheed Martin Hanford Corp. (LMHC)
- Numatec Hanford Corp. (NHC)
- Fluor Daniel Northwest (FDNW)
- B&W Protect, Inc. (BWP)
- DE&S Northwest, Inc. (DESNW)
- Rust Federal Services Northwest (RFSNW)
- Lockheed Martin Services, Inc. (LMSI)
- DynCorp (DTCS)
- SGN Eurisys Service Corp. (SESC)
- MAC Northwest (MACNW)

2000, Feb 7 — Fluor Hanford – Prime contractor for nuclear legacy cleanup

- Numatec Hanford Corporation – engineering
- Waste Management Federal Services of Hanford, Inc. – analytical services and waste management
- DynCorp Tri-Cities Services, Infrastructure services
- Protection Technology – safeguards and security
- Fluor Federal Services, Inc. – management and engineering
- Lockheed Martin Services, Inc.– telecommunications
- Waste Management Technical Services, Inc. – privatization of Hanford work efforts
- COGEMA Engineering Corporation – waste sampling and characterization

CH2M Hill Hanford Group – Storing and retrieving waste

BNFL, Inc. – Vitrification Plant

Bechtel Hanford, Inc. – Site Cleanup

Hanford Environmental Health Foundation – Employee health

Pacific Northwest National Laboratory – Science and technology

HANFORD GOVERNMENT AGENCIES

1942, Dec. 23 - 1947, Jan 1	U.S. Army Corps of Engineers
1947, Jan.1 - 1975, Jan 1	Atomic Energy Commission (AEC) established; oversees Hanford expansion; shutdown of eight original reactors, siting of FFTF at Hanford.
1975, Jan. 1 - 1977, Oct. 1	Energy Research and Development Agency (ERDA) established; brings Hanford extensive Defense Waste Management improvements, heavier involvement in management of hardware-related energy projects, new non-nuclear energy program, and regional role.
1977, Oct. 1 - present	Department of Energy (DOE) established; oversees the shutdown of the N-Reactor, processing at PUREX, recovery and stabilization of Plutonium, decommissioning and decontamination of reactors, processing plants and research facilities, recovery and return as much as possible of the Hanford Site to its original natural state. The Office of River Protection Office was established in 1998 to manage the cleanup of the Hanford waste tanks

HANFORD AND HEADQUARTERS MANAGEMENT PERSONNEL

BY DATE/ORGANIZATION

PREPARED BY JOHN BUTCHER

HANFORD DECLASSIFICATION PROJECT

NOTE: This is not an all inclusive list. Updates continue on a daily basis. Last update – November 12, 1998

---------- 1942 ----------

UNITED STATES ENGINEERS OFFICE, MANHATTAN DISTRICT - The Manhattan District was established on August 13, 1942

Colonel Leslie R. Groves was given command of the Manhattan District on September 17th. Promoted to Brigadier General on September 23rd.
James C. Marshall, Colonel, Contracting Officer and District Engineer

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia – Contract with the Manhattan District was signed on July 31, 1942. Cost-Plus-One-Dollar-Fixed-Fee

SG Blaylock, President and Managing Director

---------- 1943 ----------

HANFORD WAS KNOWN AS THE "GABLE PROJECT" or "GABLE SITE" IN EARLY 1943

CORPS OF ENGINEERS, US ARMY

LR Groves, Brigadier General, Commanding General
FT Mathias, Lt. Colonel, Area Engineer
HR Kadlec, Lt. Colonel, Deputy Area Engineer (also was Chief of Construction)
RF Ebbs, Executive Officer
HD Riley, Captain, Chief of Services
Kenneth D. Nichols, Colonel, Contracting Officer (also maybe District Engineer)
Earl H. Marsden, Colonel, Contracting Officer
AA Levin, Senior Attorney

Joseph F Sally, Major, Chief of Production (also was Area Engineer-Trail Area Office)
PB Mountjoy, Captain, Military Intelligence
RF Gornall, Major, Security

DUPONT

EB Yancy, General Manager, Explosives Dept.
Roger Williams, Asst. General Manager, Explosives Dept. - TNX
CA Rittenhouse, 3rd., Attorney, Legal Dept.
Contract with Corps of Engineers signed November 6, 1943

The Consolidated Mining And Smelting Company of Canada Limited

Dr. CH Wright

---------- 1944 ----------

CORPS OF ENGINEERS, US ARMY

FT Mathias, Lt. Colonel, Area Engineer (9-16-44)
HR Kadlec, Lt. Colonel, Deputy Area Engineer (also was Chief of Construction)
RF Ebbs, Executive Officer
HD Riley, Captain, Chief of Services
Earl H. Marsden, Colonel, Contracting Officer
JF Sally, Major, Chief of Production
Russell E Stanford, Captain
Robert F. Gournall, Major, Area Protective Security Officer
KM Gillette, Major, Intelligence Office
Bernard W. Menke, Capt., Acting Intelligence Officer

DUPONT - HANFORD ENGINEER WORKS

WH Ward, General Manager Explosives Dept.
WO Simon, Manager
TN Stapleton, General Superintendent of Protection
MF Highsmith, Security Officer for Wilmington, Del.

---------- 1945 ----------

CORPS OF ENGINEERS, US ARMY

Franklin Mathias, Colonel, Area Engineer
Benjamin T. Rogers, Lt. Col., Deputy Area Engineer/Chief of Construction & Trail Area Engr

William L. Sapper, Executive Officer
Earl H. Marsden, Colonel, Contracting Officer
KD Nichols, Colonel, Contracting Officer
RE Stanford, Captain, Production - 300 Area
JF Sally, Major, Chief of Production
OH Greager, Major, Production - 200 Area
JE Travis, Major, Executive Asst. to Colonel Marsden
EJ Bloch, Major, Facilities
Lyall I. Johnson, Captain, Chief of Military Intelligence

DUPONT

WH Ward, General Manager Explosives Dept.
RM Evans, Manager
Roger Williams, Asst. General Manager Explosives Dept.
Roger I. Harris, Legal Dept (Could be the Corps)

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

RW Diamond, Vice President & General Manager

HANFORD CAMP closed February 21, 1945. Demolition work began January 26, 1946 and was substantially completed by December 31, 1946.

---------- 1946 ----------

ATOMIC ENERGY ACT OF 1946 - Approved August 1, 1946
EXECUTIVE ORDER 9816 - Directed transfer from Manhattan District to AEC, effective midnight December 31, 1946

HANFORD MILITARY AREA - Established November 12, 1946

CORPS OF ENGINEERS, US ARMY

LR Groves, Brigadier General, Commanding General
JB Lambert, Executive Officer
KD Nichols, Brigadier General, District Engineer, Manhattan District
Frederick J. Clarke, Colonel, Area Engineer
EE Kilpatrick, Colonel, Contracting Officer
William L. Sapper, Major, Executive Officer
Harry E. Skinner, Lt. Colonel, Chief of Production
REL Stanford, Captain
David F. Shaw, Lt. Colonel, District Security Officer
W VanHoy, Major, Administrative Division

JT Flanagan, Construction Division
OS Clark, Engineering and Maintenance Division
PB Mountjoy, Captain, Intelligence & Security Division

DUPONT

WH Ward, General Manager Explosives Dept.
HF Brown, Asst. General Manager Explosives Dept.

GENERAL ELECTRIC - Contract signed on May 15, 1946. Took over September 1, 1946. AEC adopted contract on January 28, 1947. Fee was $1 per year.

DUPONT contract transferred to AEC on December 31, 1946 by Atomic Energy Act of 1946, and Executive Order 9816.

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

RE Stavert, President
Dr. Charles H. Wright

1947

CORPS OF ENGINEERS, US ARMY

Frederick J. Clarke, Lt. Colonel, Area Manager
James E. Travis, Major, Executive Officer
Harry E. Skinner, Lt. Colonel, Chief of Production
PB Mountjoy, Captain, Chief of Intelligence & Security Division

AEC assumed office on January 1, 1947

AEC-HQ

David E. Lilienthal, Chairman
Carroll L. Wilson, General Manager
Walter J. Williams, Director of Production (and Manager, Office of Field Operations
David F. Shaw, Director, Security Division at Oak Ridge, Tennessee
Paul M. Green, Comptroller

AEC - HANFORD ENGINEER WORKS

Office of Hanford Directed Operations - Carlton Shugg
David F. Shaw, Assistant Manager
Area Manager - Lt. Colonel Frederick J. Clarke

Roger I. Harris, Assistant General Counsel
RC Hageman, Chief, Operations Division
WK Crane, Assistant Chief, Research Branch
Pearl B. Mountjoy, Chief, Intelligence & Security Division (7-29-47)
HC Mountford, Acting Chief, Security Division (8-13-47)

DUPONT

Manager Legal Department (Wilmington, Delaware) - C. A. Rittenhouse, 3d

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

Dr. Charles H. Wright
AV Marcolin, Superintendent, Project 9

1948

AEC-HQ

Carrol L. Wilson, General Manager
Fletcher Waller, Assistant General Manager
Edwin E. Huddleson, Jr., Deputy General Counsel
Walter J. Williams, Director of Production
Roger S. Warner, Jr., Director of Engineering
James McCormick, Jr, Brigadier General, Director, Division of Military Applications
Dr. JR Oppenheimer, Chairman, General Advisory Committee
LR Hafstad, Director, Division of Reactor Development

AEC - HANFORD ENGINEER WORKS/WORKS or OFFICE OF HANFORD DIRECTED OPERATIONS till Sept. 15, 1948
HANFORD OPERATIONS OFFICE effective Sept. 15, 1948

Carlton Shugg, Manager to Sept. 14, 1948
FC Schlemmer, Manager commencing Sept. 15, 1948
David F Shaw, Deputy Manager
James E. Travis, Assistant to the Manager
Off-Site Office which reported to Schlemmer - Schenectady Office, LE Johnson, Manager
H. E. Thurston, Chief, Office of Organization and Personnel
Roger I. Harris, Esq., Counsel
Roy C. Hageman, Chief, Operations Division
Howard R. Freitag, Chief, Admin. and SF Accountability Branch
Milton R. Cydell, Chief, Office of Information Control

Vernon K. Schumann, Chief, Office of Security
Wendell K. Crane, Acting Chief, Research and Development Division
Charles R. Schank, Director of Finance
Donald Stutges, Asst. Operations Chief
William P. Cornelius, Chief, Construction and Maintenance Division

GENERAL ELECTRIC

GR Prout, General Manager
RC Muir, General Manager (4-14-48 and also 8-17-48)
RS Neblett, Asst. General Manager
Dr. AB Greninger, Manager of the Technical Divisions
CN Gross, Manager, Manufacturing Divisions
Frank R. Creedon, Manager, Design and Construction Divisions
WE Johnson, Design Division

DUPONT
(Unknown) Kimball, Asst. General Manager Explosives Dept.
Manager Legal Department (Wilmington, Delaware) - C. A. Rittenhouse, 3d

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

Dr. CH Wright

1949

AEC-HQ

David E. Lilienthal, Chairman
Carroll L. Wilson, General Manager
Carlton Shugg, Deputy General Manager
Joseph Volpe, Jr., General Counsel
Walter F. Colby, Director, Intelligence
Walter J. Williams, Director, Division of Production(12-30-49)
EJ Bloch, Acting Director of Production(9-14-49)
James McCormack, Jr., Brig. General, Division of Military Application
Dr. Shields Warren, Director, Division of Biology and Medicine
Roger S. Warner Jr., Director of Engineering
Roland Anderson, Chief, Patent Branch
Dr. Edward Teller, Chairman, Reactor Safeguard Committee

AEC - HANFORD WORKS

Fred C. Schlemmer, Manager
David F. Shaw, Deputy Manager
James E. Travis, Assistant to the Manager
Off-Site Offices which reported to Schlemmer
Schenectady Office, LE Johnson and James C. Stewart, Managers;
Morgantown Area Office, Leonard F. Perkins, Chief
Roger I. Harris, Assistant General Counsel
Vernon K Schumann, Chief, Security Division
WW Lowe, Special Projects Branch
Donald Sturges, Asst. Operations Chief (5-12-49)
Donald G. Sturges, Chief, Operations Division
Wendell K. Crane, Asst. to the Chief, Operations Division
Roy C. Hageman, Chief, Opetations Division
Wesley A. Clark, Chief, Records and Services Branch
William P. Cornelius, Chief, Construction and Maintenance Division

GENERAL ELECTRIC

George R Prout, Vice President and General Manager of the Nucleonics Dept.
Dr. AB Greninger, Manager of the Technical Division
Dr. OH Greager, Asst. Manager of the Technical Division
CN Gross, Manager, Manufacturing Division
Dr. Paul F. Gast
Dr. WK Woods, P-10
Dr. Ralph R. Sachs, Head of the Health Dept.
Herb M. Parker, Manager, Health Instrument Division
Kelly Woods, Senior Responsible Reviewer (Classificatioo) for Pile Engineering

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

RW Diamond, Vice President & General Manager
Dr. CH Wright

UNIVERSITY OF WASHINGTON

Lorans R. Donaldson, Director of Fish Laboratory

1950

AEC-HQ

Carrol L. Wilson, General Manager
Walter J. Williams, Director, Division of Production
EJ Bloch, Acting Director of Production(8-11-50)

Dr. Shields Warren, Director, Division of Biology and Medicine
Dr. Walter D. Claus, Acting Chief, Applied Biophysics Branch
Lawrence R. Hafstad, Director, Division of Reactor Development
Roland A. Anderson, Chief, Patent Branch
James McCormack, Jr., Brig. General, Director of Military Application

AEC - HANFORD WORKS

Fred C. Schlemmer, Manager (till at least May 25, 1950)
David F. Shaw, Manager (Was made Manager ptior to June 16, 1950)
Carlton Shugg, Deputy General Manager
James E. Travis, Assistant Manager
WK Crane, Chief, Health Physics and Biology
Donald G. Sturges, Chief of Operations Division
VK Schumann, Chief, Office of Security
FJ McHale, Asst. Chief, Security Division
Roger I. Harris, Assistant General Counsel
Howard R. Freitag, Chief, SF Accountability & Administrative Branch

GENERAL ELECTRIC

George R Prout, Vice President and General Manager of the Nucleonics Dept.
FK McCune, Assistant General Manager
Dr. Herb M. Parker, Manager, Health Instrument Division
Dr. Paul F. Gast, Pile Technology
Dr. AB Greninger, Manager, Technical Divisions
CN Gross, Manager, Manufacturing Division

DUPONT

HF Brown, General Manager Explosives Dept.

ATKINSON-JONES contract signed about Sept. 1950.

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

RW Diamond, Vice President & General Manager
WS Kirkpatrick, Assistant General Manager
Laurence Johansson, General Solicitor
Dr. CH Wright, Consulting Engineer

1951

AEC-HQ

Everett Hollis, General Counsel
CL Marshall, Deputy Director of Classification
Walter J. Williams, Director, Division of Production (1-26-51)
RW Cook, Director, Division of Production (9-27-51)
Edward J. Bloch, Acting Director, Division of Production
Frederick T. Hobbs, Division of Research
Shields Warren, Director, Div. Of Biology and Medicine
Frederick H. Warren, Deputy Director, Division of Construction and Supply
Roger I. Harris, Deputy General Counsel (10-26-51)

AEC - HANFORD WORKS

DF Shaw, Manager
JE Travis, Asst. Manager
Roger I. Harris, Assistant General Counsel
JW Thomas, Assistant General Counsel (10-26-51)
KL Englund, Chief, Health Physics and Biology, Operations Division
HJ Newton, Chairman, HOO Non-Technical Document Review Board
VK Schumann, Chief, Security Division
FJ McHale, Acting Chief, Security Division
Donald G. Sturges, Chief of Operations Division
Leonard F. Perkins, Chief, New York Liaison Office (reported to Hanford)

GENERAL ELECTRIC

GR Prout, General Manager
F. K. McCune, Assistant General Manager, Nucleonics Dept.
HM Parker, Manager, Health Instrument Divisions
Dr. AB Greninger, Manager, Engineering Nucleonics Division

DUPONT

HF Brown, General Manager Explosives Dept.

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

RW Diamond, Esq., Vice President & General Manager
Dr. CH Wright, Consulting Engineer

1952

AEC-WASHINGTON

Gordon Dean, Chairman
NW Boyer, General Manager
Walter J. Williams, Deputy General Manager
RW Cook, Director, Division of Production
EF Miller, Division of Production
AV Peterson, Chief, Fissionable Materials Branch, Division of Production
Joseph Volpe, Jr., General Counsel
Lawrence R. Hafstad, Director of Reactor Development

HANFORD OPERATIONS OFFICE

DF Shaw, Manager
JE Travis, Asst. Manager
Donald G. Sturges, Chief of Operations Division
JW. Thomas, Assistant General Counsel
KL Englund, Chief, Health Physics and Biology
F. J. McHale, Chief, Security Division
CL Robinson, Operations Division

GENERAL ELECTRIC

GR Prout, General Manager
WE Johnson, Assistant General Manager(5-28-52)
WE Johnson, Manager
AB Greninger, Mgr., Engineering
TW Hauff, Mgr., Process, appears to be in the Manufacturing Dept.
Joyce R. Kelly, Manager, Reactor Projects

CHALK RIVER, ONTARIO, CANADA

DB Langmuir, US AEC Liaison Officer

1953

AEC-WASHINGTON

RW Cook, Director, Division of Production
Jack F. Kaufmann, Chief, Classification Branch
FK Pittman, Assistant Director of Operations
TH Johnson, Director, Division of Research

HANFORD OPERATIONS OFFICE

David F Shaw, Manager
JE Travis, Asst. Manager
JI Thomas, Chief, Engineering and Construction Division
Leonard F. Perkins, Chief, Contract Section
MH Arndt, Chief, Contract & Reports Branch
FJ McHale, Chief, Security Division
Donald G. Sturges, Chief of Operations Division

GENERAL ELECTRIC

WE Johnson, Manager
Alden B. Greninger,

ATKINSON-JONES – Contract expired May 31, 1953

JA JONES – Initial contract signed June 1, 1953

LE McReynolds, General Manager

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

RW Diamond, Esq., Executive Vice President, Western Region
Dr. CH Wright, Consulting Engineer
CH Frere, General Solicitor

1954

AEC-WASHINGTON

Lewis L. Strauss, Chairman
RW Cook, Deputy General Manager (11-15-54)
RW Cook, Director, Division of Production (2-5-54)
EJ Bloch, Director, Division of Production (3-17-54)
CL Marshall, Director of Classification

HANFORD OPERATIONS OFFICE

David F. Shaw, Manager 1954
Donald G. Sturges, Chief of Operations Division
OH Greager, Manager of Technology, Engineering Department
JI Thomas, Chief, Engineering and Construction Division

GENERAL ELECTRIC

WE Johnson, General Manager
AB Greninger, Mgr., Engineering

JA JONES

LE McReynolds, Vice President and General Manager

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia

Dr. CH Wright, Consulting Engineer
CH Frere, General Solicitor

1955

AEC-WASHINGTON

EJ Bloch, Director, Division of Production
CL Marshall, Director of Classification
CD Luke, Director of Division of Classification (2-28-55)

HANFORD OPERATIONS OFFICE
David F. Shaw, Manager 5-31-1955
JE Travis, Manager, 8-23-55
JI Thomas, Director, Engineering Division
DG Sturges, Director, Operations Division(till at least 11-8-55)
AT Gifford, Deputy Director, Operations Division

The Consolidated Mining And Smelting Company of Canada Limited, at Trail, British Columbia
Contract terminated at midnight 12-31-55

RW Diamond, Vice President and General Manager
RD Perry, General Manager
Dr. CH Wright, Consulting Engineer

1956

AEC-WASHINGTON

KE Fields, General Manager, AEC
EJ Bloch, Director, Division of Production

HANFORD OPERATIONS OFFICE

JE Travis, Manager
JI Thomas, Assistant Manager
AT Gifford, Director Operations Division
RL Plum, Chief, 100 Area Branch
FJ McHale, Chief, Security Branch
HH Schipper, Director, Engineering & Supply Division
CL Robinson, Classification Officer

GENERAL ELECTRIC

WE Johnson, General Manager
HM Parker, Manager, Hanford Laboratory

1957

AEC-WASHINGTON

EJ Bloch, Director, Division of Production
HL Price, Director, Division of Civilian Application
David F. Shaw, Assistant General Manager for Manufacturing
W. Kenneth Davis, Director, Division of Reactor Development
JA Derry, Director, Division of Construction and Supply
EF Miller, Asst. Director for Operations, Production Division
John A. Hall, Director , Div. Of International Affairs

HANFORD OPERATIONS OFFICE

JE Travis, Manager
JI Thomas, Deputy Manager
AT Gifford, Director Operations Division
CL Robinson, Classification Officer
FJ McHale, Director, Security Division
HH Schipper, Director, Engineering & Supply Division
RL Hooper, Director, Organization & Personnel Division
RL Plum, 100-Area Process Branch, AEC Operations Division

GENERAL ELECTRIC

WE Johnson, General Manager
Dr. AB Greninger, General Manager, Irradiation Processing Department

JA JONES

LE McReynolds, General Manager
IE Dunn, Project Manager

---------- 1958 ----------

AEC-WASHINGTON

Lewis L. Strauss, Chairman, US AEC
General KE Fields, General Manager
Commissioners - Vance, Graham, Floberg, Libby
EJ Bloch, Director, Division of Production
EF Miller, Asst. Director for Operations, Production Division
CL Dunham, M.D., Director, Division of Biology and Medicine

HANFORD OPERATIONS OFFICE

JE Travis, Manager
FJ McHale, Director, Security Division
CL Robinson, Classification Officer
HH Schipper, Director, Engineering and Supply Division
LL Sadler, Chief, Special Assistance Section

GENERAL ELECTRIC

WE Johnson, General Manager
Dr. AB Greninger, General Manager, Irradiation Processing Department

---------- 1959 ----------

AEC-WASHINGTON

John A. McCone, Chairman
GF Quinn, Director, Division of Production
EF Miller, Asst. Director for Operations, Production Division
Brigadier General, Alfred D. Starbird, Director of Military Applications

HANFORD OPERATIONS OFFICE

JE Travis, Manager
HH Schipper, Assistant Manager
CL Robinson, Classification Officer
DJ O'Neill, Director, Construction Engineering and Supply Division

GENERAL ELECTRIC

WE Johnson, General Manager
Dr. AB Greninger, General Mgr., Irradiation Processing Dept.
BJ Borgmier, Specialist, Classification - Declassification

1960

AEC-WASHINGTON

John A. McCone, Chairman(to at least Dec. 13,1960
GF Quinn, Director, Division of Production
Paul C.Fine, Director, Office of Operations Analysis and Forecasting
HF Carroll, Chief, Declassification Branch

HANFORD OPERATIONS OFFICE

JE Travis, Manager
Verne B. Lewis, Assistant Manager
Allan T Gifford, Director
HE Parker, Deputy Director, PE & M Division
PM Midkiff, Chief of Fuels and Metallurgy Branch
RL Plum, Chief of Reactor Branch
JT Christy, Chief of Separations Branch
JM Musser, Chief of Engineering Branch
MH Arndt, Chief of Special Projects Branch
KL Englund, Chief of Radiation Sciences Branch
JE Goodwin, Chief of Reports and Analysis Branch
CL Robinson, Classification Officer
HH Schipper, Asst. Manager, Technical Operations
MH Arndt, Chief, Special Operations Branch

GENERAL ELECTRIC

AB Greninger, General Mgr., Irradiation Processing Dept.

1961

AEC-WASHINGTON

Glenn T. Seaborg, Chairman
Commissioner Graham
AR Luedecke, General Manager
Edward J. Bloch, Asst. General Manager for Operations and Manufacturing

Roland A. Anderson, Assistant General Counsel for Patents
George F Quinn, Director, Division of Production
Nathan H Woodruff, Director, Division of Operational Safety
JA Derry, Director, Division of Construction and Supply
Brig. General AW Betts, Director, Div. of Military Applications
Dr. CL Dunham, Director, Division of Biology and Medicine
DS Burrows, Controller
Neil D. Naiden, General Counsel
EJ Bloch, Ass't. General Manager for Manufacturing

HANFORD OPERATIONS OFFICE

James E. Travis, Manager
Robert L. Hooper, Director, Organization & Personnel Division
AT Gifford, Director, Production Division
Chester G. Brinck, Chief Counsel
MH Arndt, Chief, Engineering Branch
RL Plum, Chief, Reactor Operations Branch

GENERAL ELECTRIC

Dr. A. B. Greninger, General Mgr., Irradiation Processing Dept.
Robert Keith Sharp, Patent Attorney

JA JONES

Ira E. Dunn, Resident Manager

---------- 1962 ----------

AEC-WASHINGTON

Glenn T. Seaborg, Chairman, US AEC
FP Baranowski, Director, Division of Production
EF Miller, Technical Assistant Director, Division of Production
CL Marshall, Director, Division of Classification
Roland A. Anderson, Assistant General Counsel for Patents
EJ Bloch, Assistant General Manager for Operations
John V.(Vince) Vinciguerra, Director, Division of Contracts

HANFORD OPERATIONS OFFICE

JE Travis, Manager
AM Waggoner, Assistant Manager for Administration

Carl W. Zanger, Director, Health & Safety Division
AT Gifford, Director, Production Division
CL Robinson, Classification Officer(10-1-62)
Jim P Derouin, Classification Officer (11-15-62)
Francis J. McHale, Director, Security Division
DJ O'Neill, Director, Construction Engineering Division
JH Krema, Acting Director, Construction Engineering Division
Leonard F. Perkins, Assistant Director, Construction Engineering Division
Robert L. Hooper, Director, Organization & Personnel Division
Chester G. Brinck, Chief Counsel
Mark H. Arndt, Chief, Engineering Branch

GENERAL ELECTRIC

WE Johnson, General Manager
AB Greninger, General Manager, Irradiation Processing Department
Robert Keith Sharp, Patent Attorney

1963

AEC-WASHINGTON

Glenn Seaborg, Chairman
Commissioner Palfrey
Commissioner Ramey
Commissioner Tape
Commissioner Robert E. Wilson
Commissioner John S. Graham (5-20-63)
Commissioner Loren K. Olson (5-20-63)
Commissioner Leland J. Haworth (5-20-63)
General Manager, AR Luedecke (5-20-63)
RE Hollingsworth, Deputy General Manager (5-20-63)
Dwight A. Ink, Assistant General Manager (5-20-63)
RE Hollingsworth, Acting General Manager
EJ Bloch, Assistant General Manager for Operations
FP Baranowski, Director, Division of Production
John A. Derry, Director, Division of Construction
John V. Vinciguerra, Director, Division of Contracts
Brig. General Austin W. Betts, Director of Military Application (5-20-63)
Curtis A. Nelson, Director, Division of Inspection

RICHLAND OPERATIONS OFFICE

January 1st, 1963 the name of the Office was changed from Hanford Operations Office to Richland Operations Office

JE Travis, Manager
AT Gifford, Director, Production Division
HH Schipper, Asst. Manager for Technical Operations
Paul G. Holsted, Director, Civilian Reactor Development & Research Division
FJ McHale, Director, Security Division

GENERAL ELECTRIC

WE Johnson, General Manager
RL Dickeman, General Manager, N-Reactor Dept.
Robert Keith Sharp, Patent Attorney

VITRO – Contract signed on May 15,1963

---------- 1964 ----------

AEC-WASHINGTON

Glenn T. Seaborg, Chairman, Atomic Energy Commission
AR Luedecke, General Manager
W. Devine, Division of Production
FP Baranowski, Director, Division of Production
Roland A. Anderson, Assistant General Counsel for Patents
John V. Vinciguerra, Director, Division of Contracts
John A. Derry, Director, Division of Construction
EJ Bloch, Assistant General Manager for Operations

RICHLAND OPERATIONS OFFICE(RLOO)

JE Travis, Manager
AT Gifford, Director, Production Division
MR Schneller, Chief, Dual Purpose Reactor Operations Branch
Leonard F Perkins, Director, Contracts and Procurement Division
OW Rathbun, Acting Chief, Metallurgical Operations Branch (11-20-64)
OW Rathbun, Chief, Metallurgical Operations Branch (12-10-64)

GENERAL ELECTRIC

JH Warren, General Manager, Chemical Processing Department

---------- 1965 ----------

AEC-WASHINGTON

EJ Bloch, Acting General Manager
FP Baranowski, Director, Division of Production
James T. Ramey, Commissioner
WT Riley, Assistant Director For Physical Security

RICHLAND OPERATIONS OFFICE

JE Travis, Manager (6-28-65)
AM Waggoner, Acting Manager (7-2-65)
DG Williams, Manager (8-2-65)
HH Schipper, Asst. Manager for Technical Operations
AT Gifford, Director, Production Division
Carl N. Zanger, Director, Health and Safety Division
Marvin R Schneller, Chief, Dual Purpose Reactor Operations Branch
MH Arndt, Chief, Dual Purpose Reactor Operations Branch
Chester G Brinck, Chief Counsel
John H. Krema, Director, Engineering and Construction Division
Leonard F Perkins, Director, Contracts and Procurement Division

GENERAL ELECTRIC

WE Johnson, General Manager
RL Dickeman, General Manager (May 5, 1965)
Robert Keith Sharp, Patent Attorney

VITRO

John M. Frame, President

DOUGLAS UNITED NUCLEAR

1966

AEC-WASHINGTON

Glenn T. Seaborg, Chairman
RE Hollingsworth, General Manager
James T. Ramey, Commissioner
FP Baranowski, Director, Division of Production
Bill Voigt, Deputy Director, Division of Production
Joseph L. Smith, Director, Division of Contracts

RICHLAND OPERATIONS OFFICE

DG Williams, Manager
AT Gifford, Director, Production Division
MH Arndt, Chief, Dual Purpose Reactor Operations
W. Devine, Jr., Director, Production Reactor Division
HH Schipper, Assistant Manager of Technical Operations
HE Parker, Director, Chemical Processing Division
Paul M. Midkiff, Deputy Director, Production Reactor Division
JP Derouin, Classification Officer
OR Simpson, Deputy Director, Security Division
John H. Krema, Director, Engineering and Construction Division
Leonard F Perkins, Director, Contracts and Procurement Division
Chester G Brinck, Chief Counsel
PG Holsted, Director, Research and Development Division

GENERAL ELECTRIC

RL Dickeman, General Manager (9-26-66)

DOUGLAS UNITED NUCLEAR

Dr. Charles D. Harrington, President

ISOCHEM

JN Judy, President
Harris D. Gilbert, Vice President

JA JONES

Ira E. Dunn, Resident Manager

1967

AEC-WASHINGTON

FP Baranowski, Director, Division of Production
John A. Erlewine, Asst. General Manager for Operations

RICHLAND OPERATIONS OFFICE

Donald G Williams, Manager
BP Helgeson, Deputy Manager
W. Devine, Jr., Director, Production Reactor Division
OW Rathbun, Chief, Metallurgical Operations Branch
Oscar J. Elgert, Acting Director, Chemical Processing Division
Carl N. Zanger, Director, Health and Safety Division
MH Arndt, Chief, Dual Purpose Reactor Operations
John Krema, Director, Engineering and Construction Division

GENERAL ELECTRIC

RL Dickeman, General Manager

DOUGLAS UNITED NUCLEAR

Dr. Charles D. Harrington, President
RW Hallet, Jr., Deputy General Manager
Carl W. Kuhlman, Vice President
WJ Ferguson, Manager, N Project
OC Schroeder, Vice President

ISOCHEM

Dr. J Nelson Judy, President
Harry P. Shaw, Manager, Facilities Engineering
PE Reed, Vice President Plant Operations

JA JONES

Ira E. Dunn, Resident Manager

1968

AEC-WASHINGTON

Johnson, Commissioner
RE Hollingsworth, General Manager
JA Erlewine, Assistant General Manager for Operations
GF Quinn, Assistant General Manager for Plans & Production
FP Baranowski, Director, Division of Production
Joseph L. Smith, Director, Division of Contracts

JA Derry, Director, Division of Production

RICHLAND OPERATIONS OFFICE

DG Williams, Manager
RJ Hart, Deputy Manager
H. McMurry, Classification Officer
JP Derouin, Classification Officer (5-20-68)
MR Schneller, Director, Office of Advanced Planning
John H. Krema, Director, Engineering and Construction Division

ATLANTIC RICHFIELD HANFORD CO.

RP Corlew, Vice President, Operations

Hanford Engineering Services(HES), Division of VITRO Corp

Frank B. Jewett, Jr., President of VITRO Corp
John M. Frame, President

JA JONES

Edwin L. Jones, President (Home Office in Charlotte, NC)
Ira E. Dunn, Resident Manager

1969

AEC-WASHINGTON

WE Johnson, Commissioner
Joseph L. Smith, Director, Division of Contracts
John A. Derry, Director, Division of Construction

RICHLAND OPERATIONS OFFICE

DG Williams, Manager
RJ Hart, Deputy Manager
Leonard F. Perkins, Director, Contracts and Procurement Division
JP Derouin, Classification Officer
W. Devine, Jr., Director, Production Reactor Division
Oscar J Elgert, Director, Chemical Processing Division
FJ McHale, Director, Security Division
John H. Krema, Director, Engineering and Construction Division

ATLANTIC RICHFIELD HANFORD COMPANY

Dr. Lawrence M. Richards, President

DOUGLAS UNITED NUCLEAR

Carl W. Kuhlman, Vice President

Hanford Engineering Services(HES)

G. Kligfield, General Manager
John M. Frame, President

1970

AEC-WASHINGTON

RE Hollingsworth, General Manager
FP Baranowski, Director, Division of Production

RICHLAND OPERATIONS OFFICE

DG Williams, Manager
OJ Elgert, Director, Production Programs Division
OJ Elgert, Director, Chemical Processing Division (10-15-70)
John H. Krema, Director, Engineering and Construction Division
RL Plum, Chief of Reactor Branch
W. Devine, Jr., Director, Production Reactor Division

ATLANTIC RICHFIELD HANFORD COMPANY

Dr. Lawrence M. Richards, President

DOUGLAS UNITED NUCLEAR

Dr. Charles D. Harrington, President
OC Schroeder, Vice President

JA JONES

Ira E. Dunn, Resident Manager

1971

RICHLAND OPERATIONS OFFICE

OJ Elgert, Director, Production Programs Division
W. Devine, Jr., Director, Production Reactor Division
JP Derouin, Classification Officer

ATLANTIC RICHFIELD HANFORD COMPANY

Dr. Lawrence M. Richards, President

DOUGLAS UNITED NUCLEAR

Dr. Charles D. Harrington, President
OC Schroeder, Vice President

1972

RICHLAND OPERATIONS OFFICE

FJ McHale, Director, Security Division

1973

RICHLAND OPERATIONS OFFICE

TA Nemzek, Manager
Oscar J. Elgert, Director, Production and Waste Management Programs Division

ATLANTIC RICHFIELD

Dr. LM Richards, President

UNITED NUCLEAR INDUSTRIES, INC

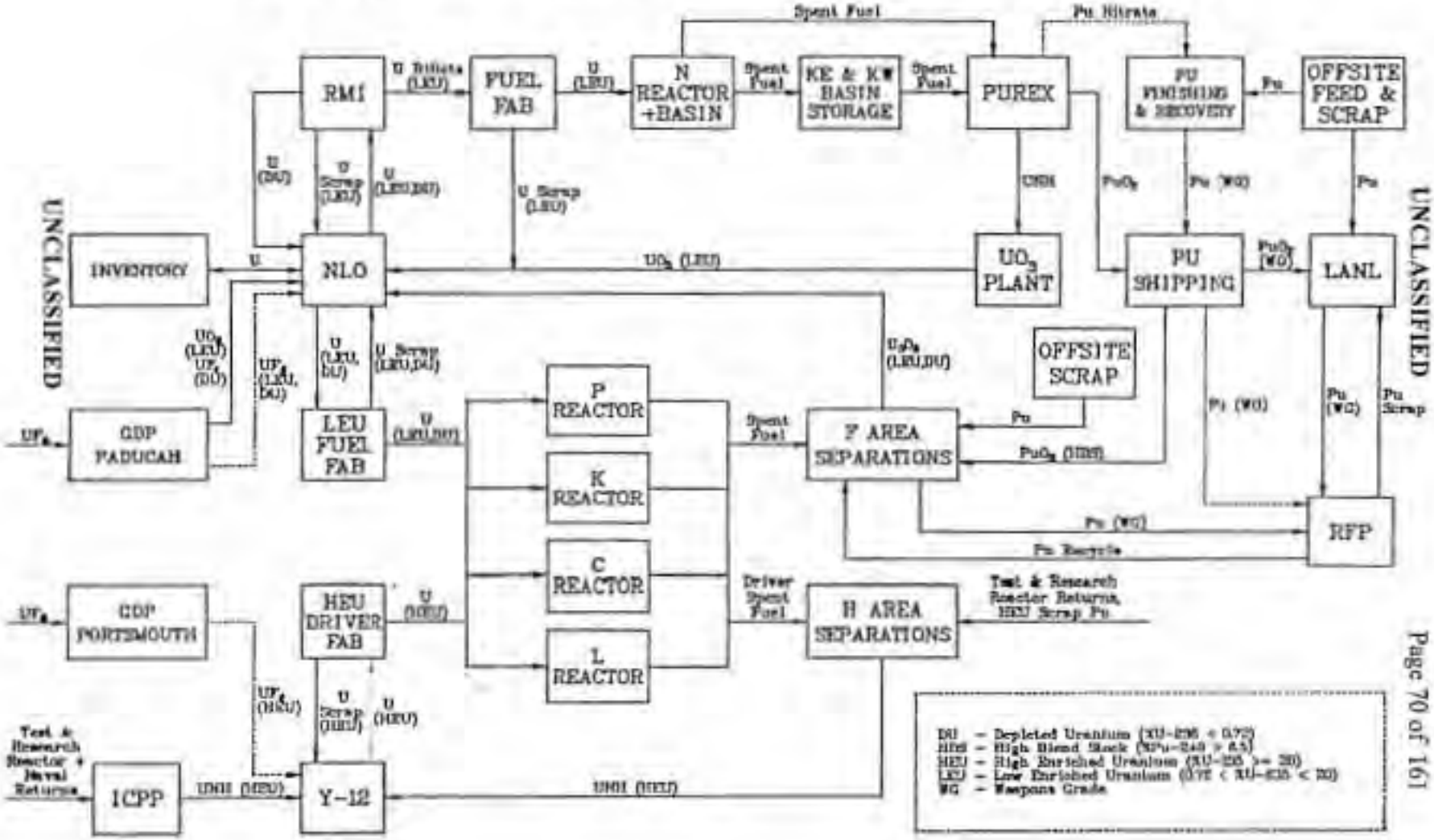
Dr. CD Harrington, President

1974

RICHLAND OPERATIONS OFFICE

Harold E. Ransom, Classification Officer

URANIUM & PLUTONIUM MATERIAL FLOWS

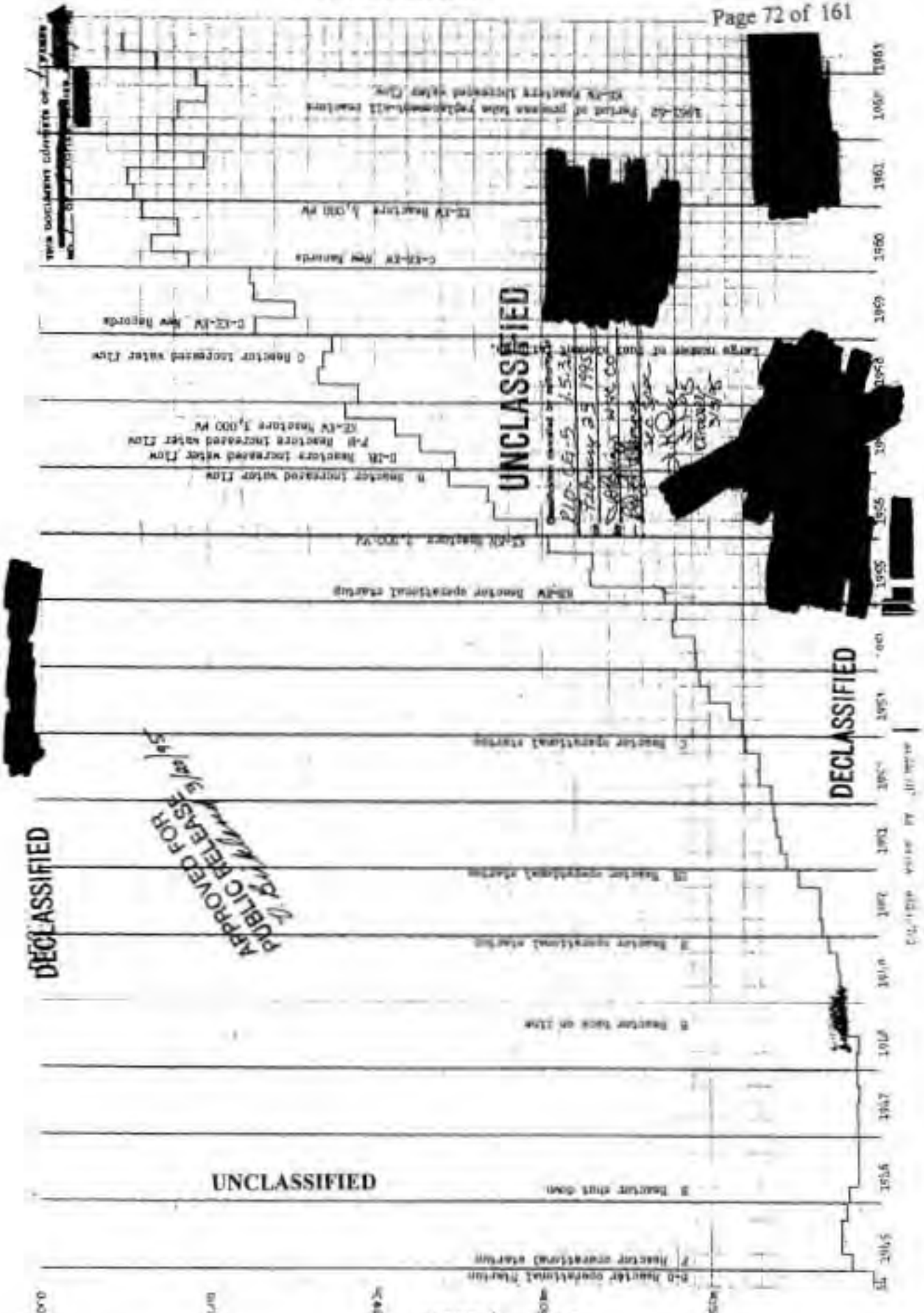


Chronology of Hanford Reactors

	Construction Begun	Construction Completed	Start Operation	Shut Down*	Retired	Power Level Design	Power Level Maximum
B Reactor	Aug. 1943	Sept. 1944	Sept. 26, 1944	2/12/68	6/79	250 MW	2090 MW
D	Nov. 1943	Dec. 1944	Dec. 17, 1944	6/26/67	6/67	250 MW	2090 MW
F	Dec. 1943	Dec. 1944	Feb. 25, 1945	6/25/65	6/65	250 MW	2090 MW
DR	Dec. 1947	Oct. 1950	Oct. 3, 1950	12/30/64	12/64	250 MW	2090 MW
H	Mar. 1948	Oct. 1949	Oct. 29, 1949	4/21/65	4/65	400 MW	2090 MW
C	Jun. 1951	Nov. 1952	Nov. 18, 1952	4/25/69	6/79	600 MW	2460 MW
KW	Nov. 1952	Dec. 1954	Jan. 4, 1955	2/1/70	10/79	1800 MW	4620 MW[1]
KE	Jan. 1953	Feb. 1955	Apr. 17, 1955	1/29/71	10/79	1800 MW	4620 MW[1]
N	May 1959	Mar. 1964	Dec. 31, 1963		10/89	4000 MW	4800 MW
HTLTR**	Nov. 2,1964	June 30, 1967					
FFTF	Jul. 1970	Dec. 1978	Apr. 1982	1992 (Stand By)	Pending	400 MW	

* B Reactor shutdown and held in standby from March 19, 1946 to June 2, 1948.
* B, C, D, KE and KW reactors were shutdown due to work stoppage from July 8, 1966 to August 25, 1966.
* N Reactor startup agreement signed by WPPSS at 0900 on Aug 5, 1971.
** High Temperature Lattice Test Reactor
1. Average power for KE during February 1968 was 4894 MW and for KW during February 1968 was 5162 MW. Approval documentation to achieve these power levels have not found to date.

UNCLASSIFIED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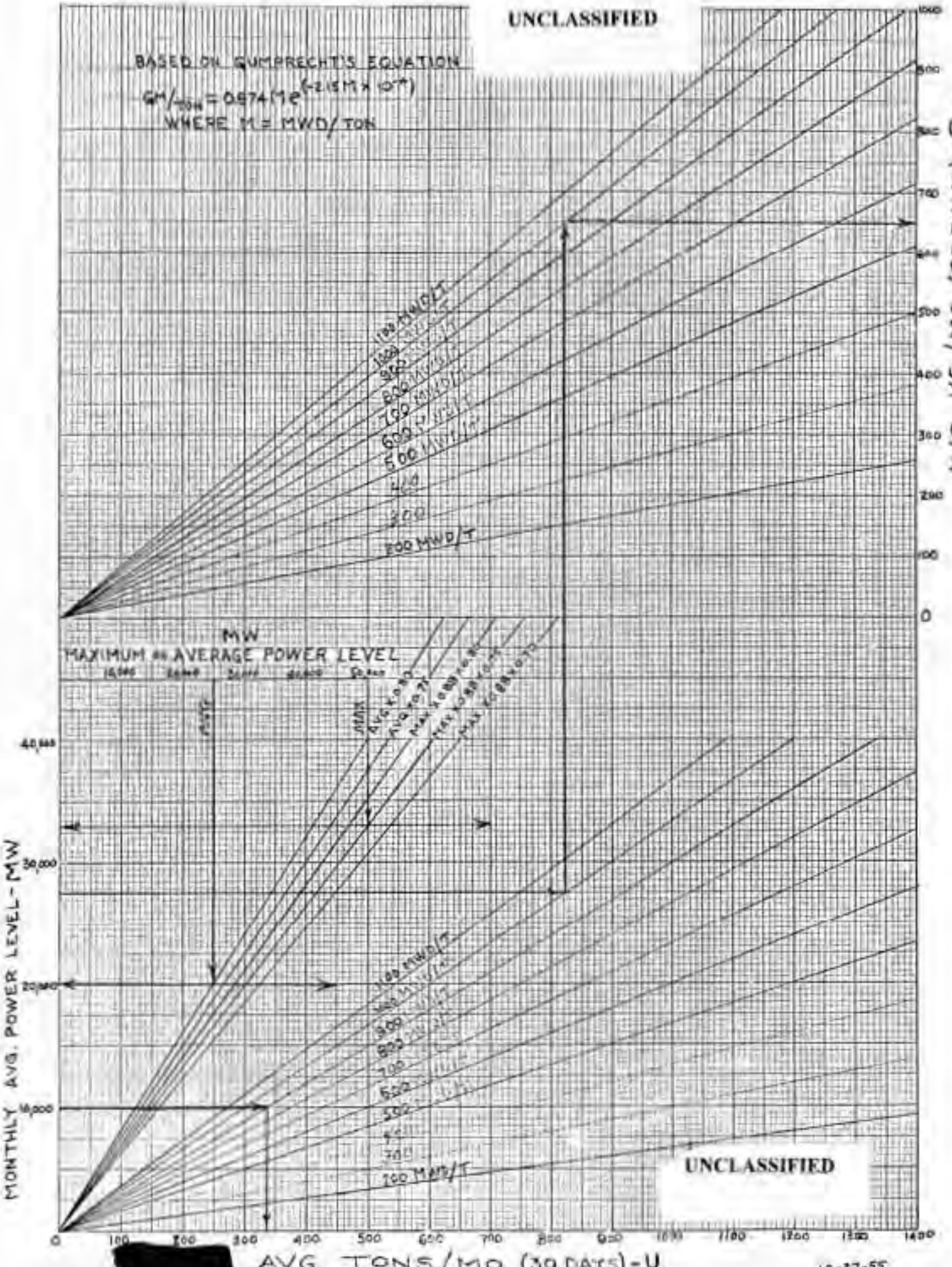

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10-27-55

Manpower - Site Total

Year	Total	Year	Total
1995	14,049	1961	10,395
1994	18,715	1960	10,398
1993	17,340	1959	8,924
1992	16,096	1958	9,005
1991	15,043	1957	9,357
1990	14,045	1956	10,982
1989	12,695	1955	10,759
1988	12,443	1954	15,609
1987	14,531	1953	17,409
1986	14,544	1952	13,650
1985*		1951	16,773
1984	13,444	1950	14,035
1983	13,010	1949	9,525
1982	11,592	1948	23,642
1981	12,064	1947	15,564
1980	12,100	1946	4,943
1979	11,915	1945	4,982
1978	11,225	1944	21,782
1977	12,296	1943	30,713
1976	10,684		
1975	9,801		
1974	8,697		
1973	7,566		
1972	7,060		
1971	6,546		
1970	7,805		
1969	8,252		
1968	8,691		
1967	9,142		
1966	8,897		
1965	9,151		
1964	9,539		
1963	9,391		
1962	10,602		

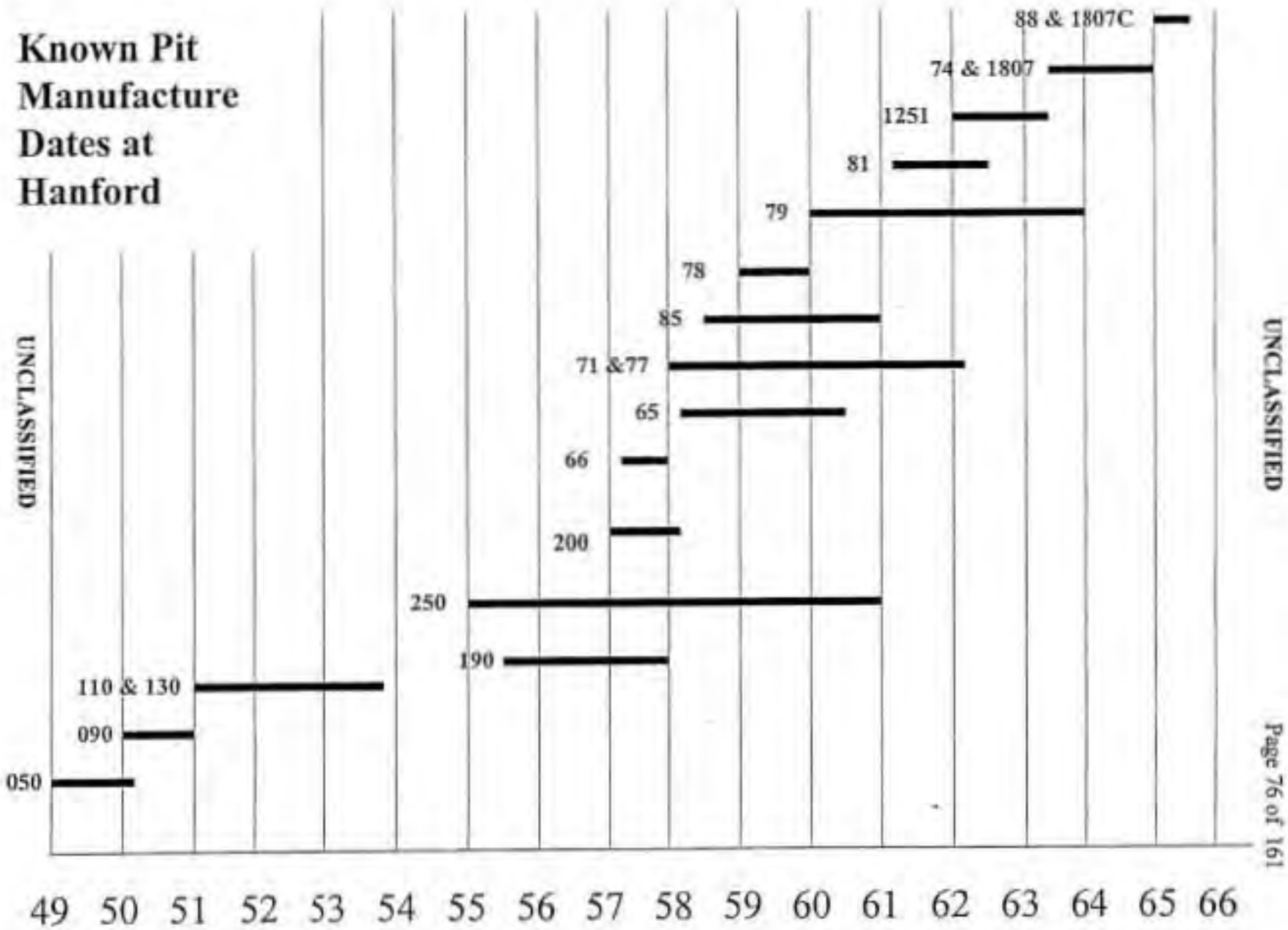
* Data not available

Fabrication at Plutonium Finishing Plant

Assembly	Start	Stop
050	1949	1950
090	1950	1950
110	1/51	12/54
130	1/51	12/54
190	5/55	7/55
200	1/57	2/58
66	6/57	12/57
65	3/58	2/60
85	7/58	10/60
81	1959	6/62
MC -1251	1958 or 1959	6/63
MC -1807	1958 or 1959	12/64
74	7/63	12/64
88	12/64	12/65
MC -1807C (MC - 2064)	12/64	6/65

Also the following assemblies were fabricated at PFP, but actual dates are unknown (only approximate dates) at this time.

Assembly	Start	Stop
71	1958	1962
77	1958	1962
78	1959	1960
79	1960	1964
250	1955	1957
MC - 1249	Unknown	


Known Pit Manufacture Dates at Hanford
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88 & 1807C
74 & 1807
1251
81
79
78
85
71 &77
65
66
200
250
190
110 & 130
090
050
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66

Nuclear Stockpile Information[1]

Year	Total	Tonnage (10^6)	Built	Retired	Disassembled[2]
1945	2	0.01	2	0	NA
1946	9	0.18	7	0	NA
1947	13	0.26	4	0	NA
1948	50	1.25	43	6	NA
1949	170	4.19	123	3	NA
1950	299	9.53	264	135	NA
1951	438	35.25	284	145	NA
1952	841	49.95	644	241	NA
1953	1169	72.80	345	17	NA
1954	1703	339.01	535	1	NA
1955	2422	2879.99	806	87	NA
1956	3692	9188.65	1379	109	NA
1957	5543	7545.86	2232	381	NA
1958	7345	7303.54	2619	817	NA
1959	12298	9054.62	7088	2135	NA
1960	18638	10491.17	7178	838	NA
1961	22229	10947.71	5162	1571	NA
1962[3]	25992	12825.02	4529	766	NA
1963	28347	15977.17	3185	830	NA
1964	29306	16943.97	3493	2534	NA
1965	30889	15152.50	3519	1936	NA
1966	30961	14037.46	2429	2357	NA
1967	31005	12786.17	1693	1649	NA
1968	29347	11837.65	536	2194	NA
1969	26986	11714.44	684	3045	NA
1970	25269	9695.20	219	1936	NA
1971	24959	8584.40	1073	1347	NA
1972	24964	8531.51	1546	1541	NA
1973	25591	8452.00	1171	544	NA
1974	25743	8325.22	959	807	NA
1975	24251	7368.38	748	2240	NA
1976	22497	5935.51	427	2181	NA
1977	21720	5845.00	221	998	NA
1978	20622	5721.16	50	1148	NA
1979	20062	5696.34	170	730	NA
1980	19158	5618.86	0	904	732
1981	17301	5382.91	30	1887	1577
1982	16102	5358.89	338	1537	1535

Nuclear Stockpile Information (con't)

Year	Total	Tonnage (10^6)	Built	Retired	Disassembled[2]
1983	15570	5232.476	217	749	1120
1984	14614	5192.20	187	1143	994
1985	13487	5217.482	195	1322	1075
1986	12403	5414.54	140	1224	1015
1987	11445	4882.14	0	958	1189
1988	10422	4789.77	0	1023	581
1989	8628	4743.34	0	1794	1208
1990[3]		4518.91			1154
1991		3795.94			1595
1992		3167.88			1856
1993		2647.31			1556
1994		2375.30			926[5]

Nuclear Stockpile Information notes:

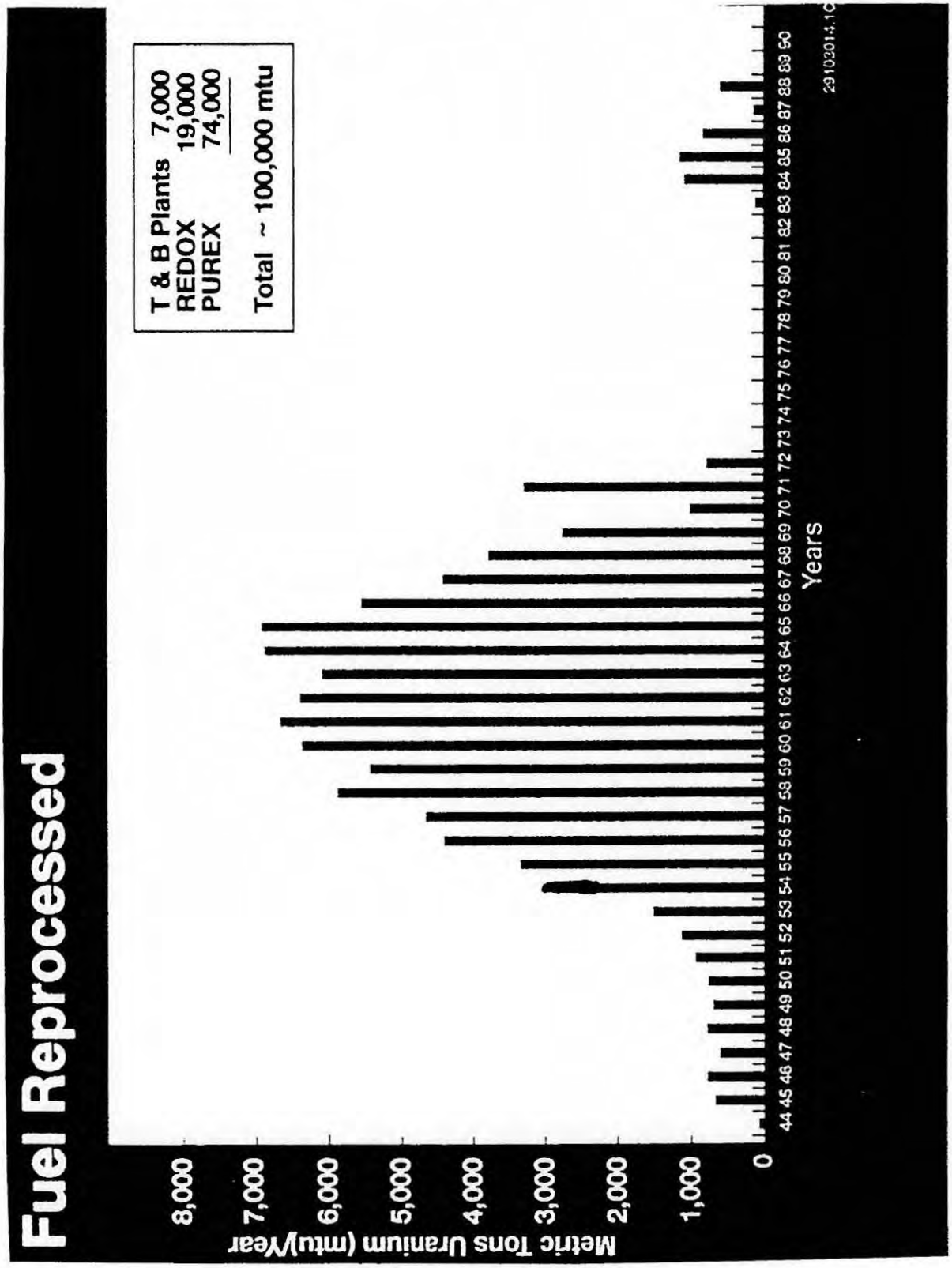
1. Declassified by Classification Bulletin, WNP-90 dated July 29, 1994.
2. Disassembles are not to be equated with the number of retirements.
3. Total numbers not given in data provided by WNP-90, but was calculated using the data that was given for years 1962 through 1989.
4. WNP-90 did not provide TOTAL, BUILT and RETIREMENT values, thus nothing could be calculated.
5. Through April 1994.

Sample 105-F Hanford Reactor Operating History

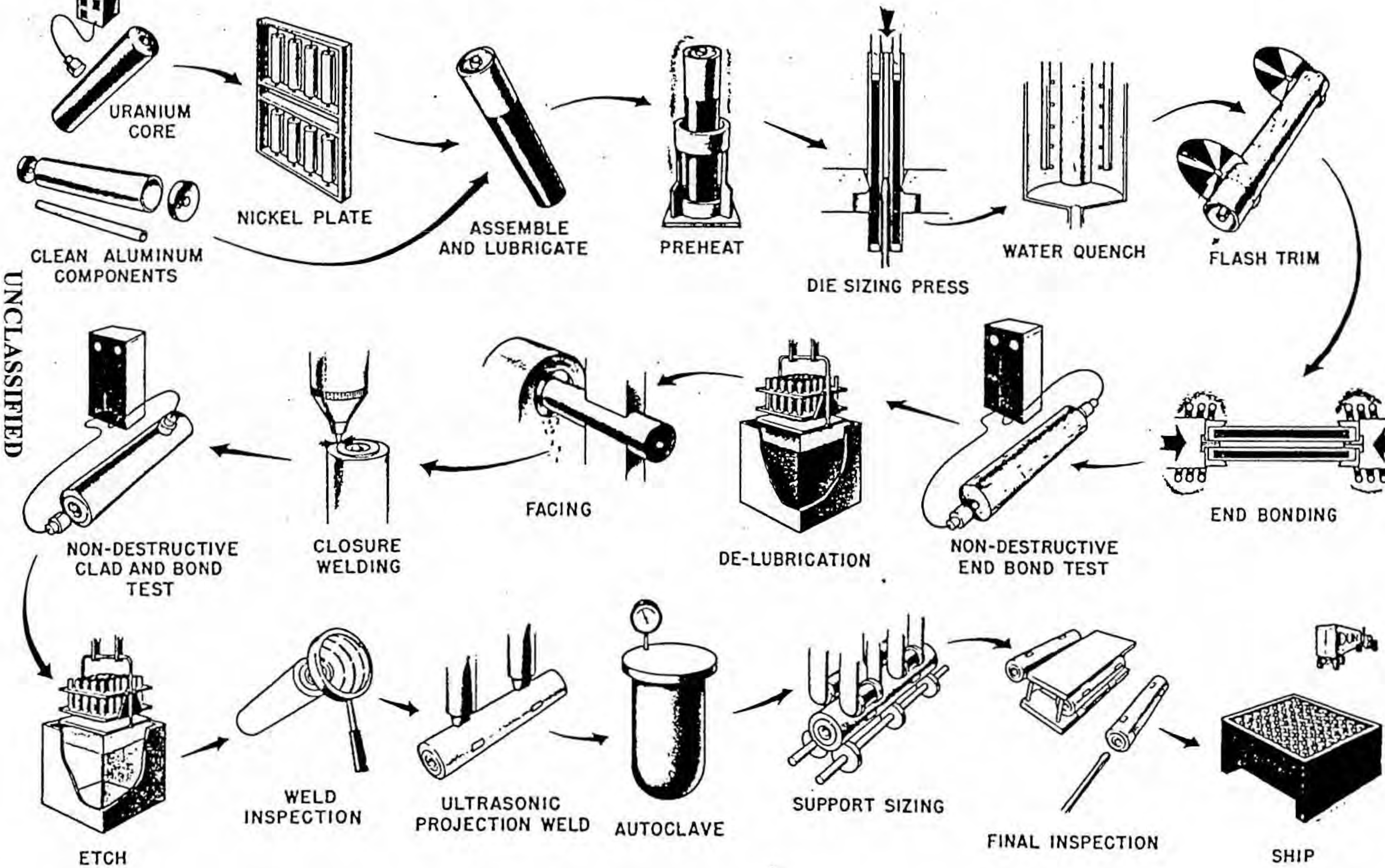
Year	Megawatt Days (MWD)	Effective Full Power (Days/Year)	Percent Efficient (EFPD/Year)
1951	126.85	204.42	56.0
1952	125.476	245.54	67.3
1953	178.913	299.18	81.9
1954	225.693	281.06	77.0
1955	186.960	209.36	57.3
1956	180.229	202.28	55.4
1957	276.645	242.46	66.4
1958	405.814	300.60	82.4
1959	419.350	252.00	69.0

Plutonium Fuel Elements Fabricated at Hanford – Through 1964

Reactor	Fuel/Clad	Configuration	No. Fabricated
PRTR	UO_2 -PuO_2, Zr	19 – rod cluster	1425
	Al - Pu, Zr	19 – rod cluster	1406
PRCF	Al-Pu, Zr	19 – rod cluster	570
MTR	Al-Pu, Al	Plates	950
Critical Assembly	Al-Pu, Zr	Rods	400
PCTR	Al-Pu, Al	Rods	42
	Al-Pu, Zr	Rods	250
	U-Pu, Al	Rods	200
	UO_2 - PuO_2, ZrRods		21
SRO	Al-Pu, Al	Pins	60
Physics Tests	Al-Pu, Al	Foil	400
Trans Pu & High Exposure	Al-Pu, Al	Rods	1500
	Al-Pu, SS	Rods	40
Euratom	UO_2-PuO_2, Zr	Rods	21
Bettis	Pu-Al	4 – Rod Clusters	30
	U^{235}-Al, Zr	4 – Rod Clusters	30
	UO_2-PuO_2, Zr	4 – Rod Clusters	30
C - 1 loop	Al-Pu, Al	Rods	40
Special	MgO-PuO_2, Zr	19 – Rod Cluster	19
	ZrO_2-PuO_2, Zr	19 – Rod Cluster	19
Research Irradiation	Pu, U, Th Metal Ceramic Cermet		Several Hundred


Fuel Reprocessed
T & B Plants 7,000
REDOX 19,000
PUREX 74,000
Total ~ 100,000 mtu
Metric Tons Uranium (mtu)/Year
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
8,000
44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
Years

HOT DIE SIZE PROCESS FLOW



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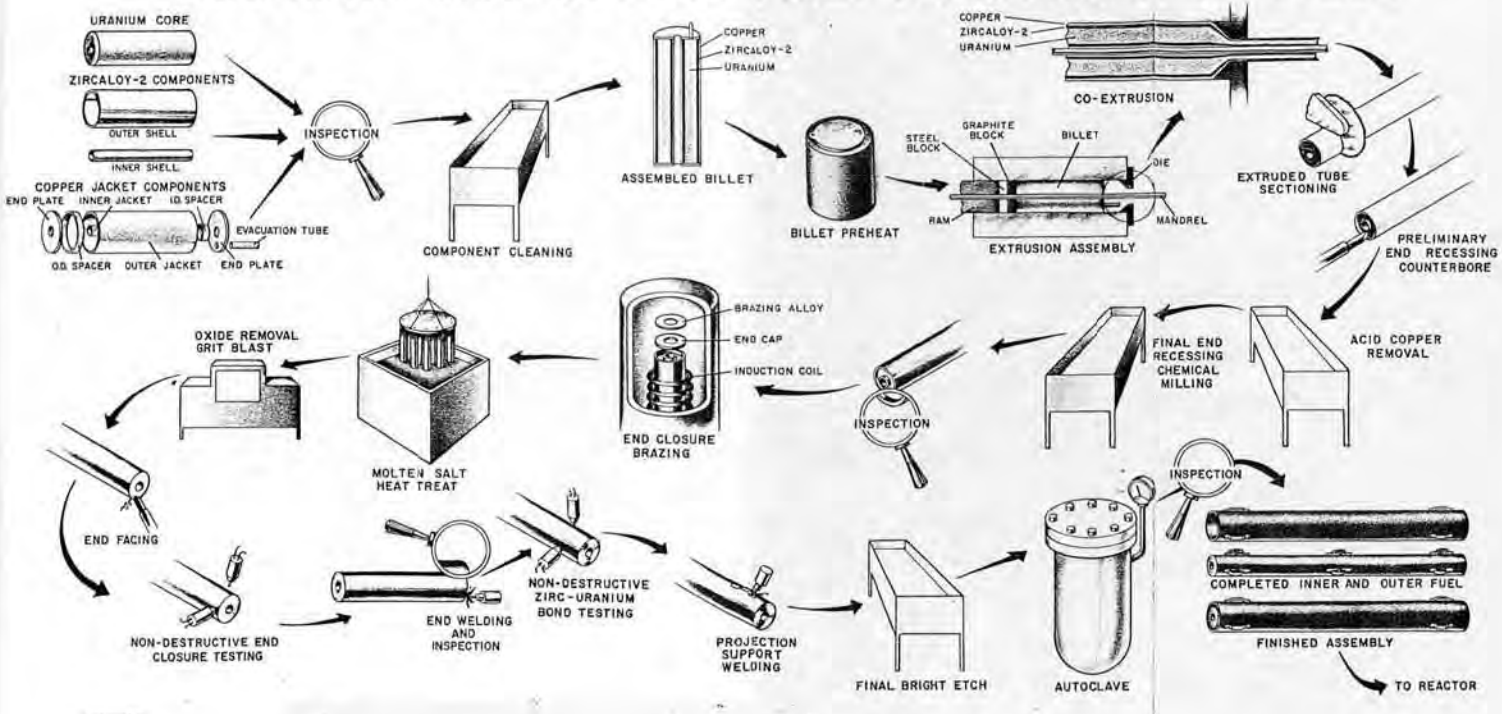
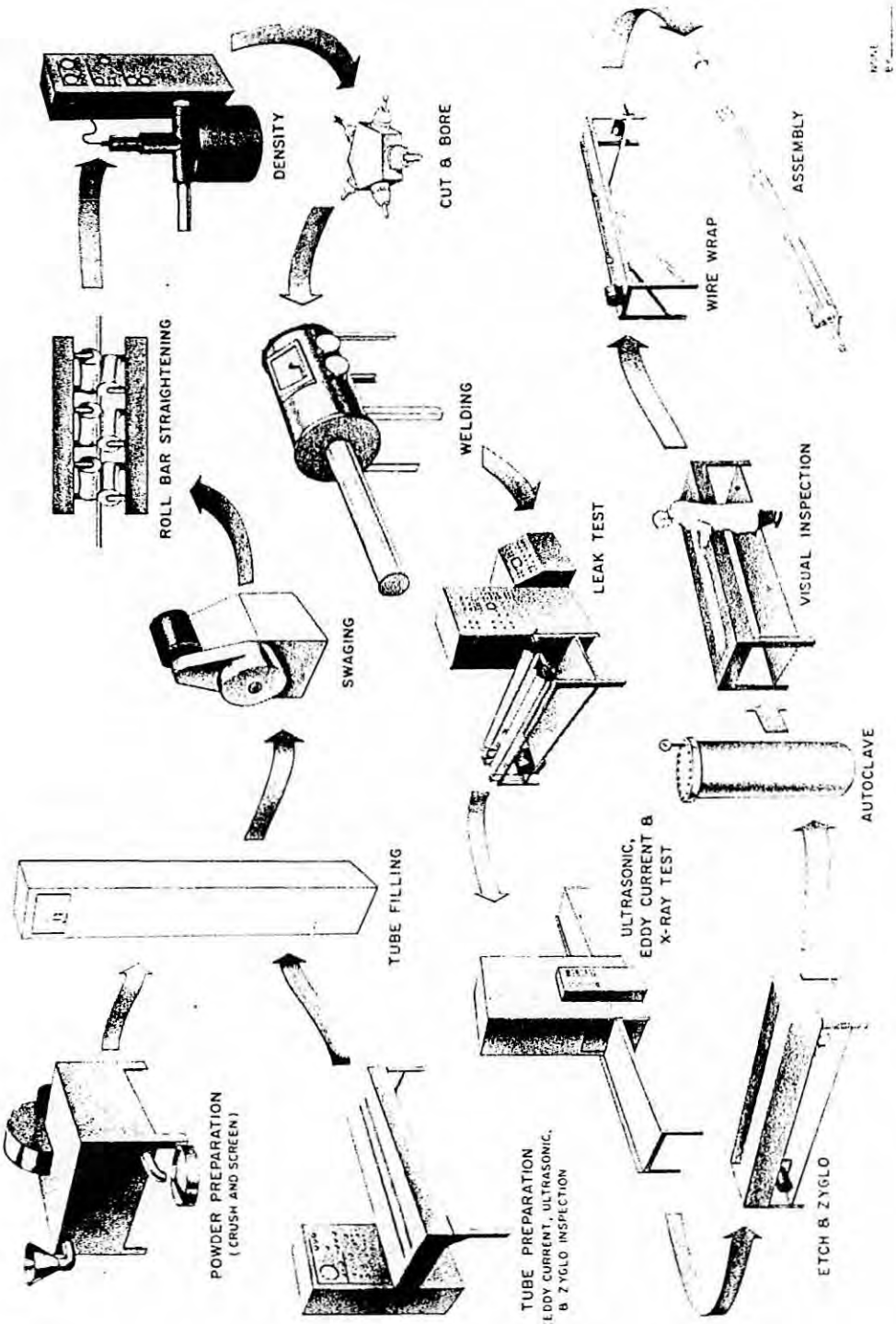
STANDARD TUBE-IN-TUBE FUEL FABRICATION PROCESS





Swaged Fuel Elements for PRTR - Flow sheet

Production of Plutonium/Tritium at Hanford and Savannah River

Location	Quantity	Time Frame	Type
Hanford	54.5 metric tons	1945 thru 1987	Weapons-Pu
Hanford	12.9 metric tons	1967 thru 1987	Fuel-Pu
Savannah River	36 metric tons	1953 thru 1958	Weapons-Pu
Hanford	~13 kilograms	1949 thru 1971	Tritium

Hanford was not the first site to produce tritium. Tritium was produced at Argonne National Laboratory and the Clinton Laboratories. Below is a time line to indicate initial tritium production:

1943 A few cc's of tritium were produced at Argonne National Laboratory.

1944 A few cc's of tritium were produced at Clinton Laboratories.

1945 8.5 cc's were produced at Argonne National Laboratory

1946 Hanford irradiated pellets were shipped to Argonne National Laboratory

1948 Argonne requested all tritium production work go to Hanford – 1127 slugs in Reactor's by May.

1949 First extraction line operational – glass line

1951 Construction of two metal lines initiated.

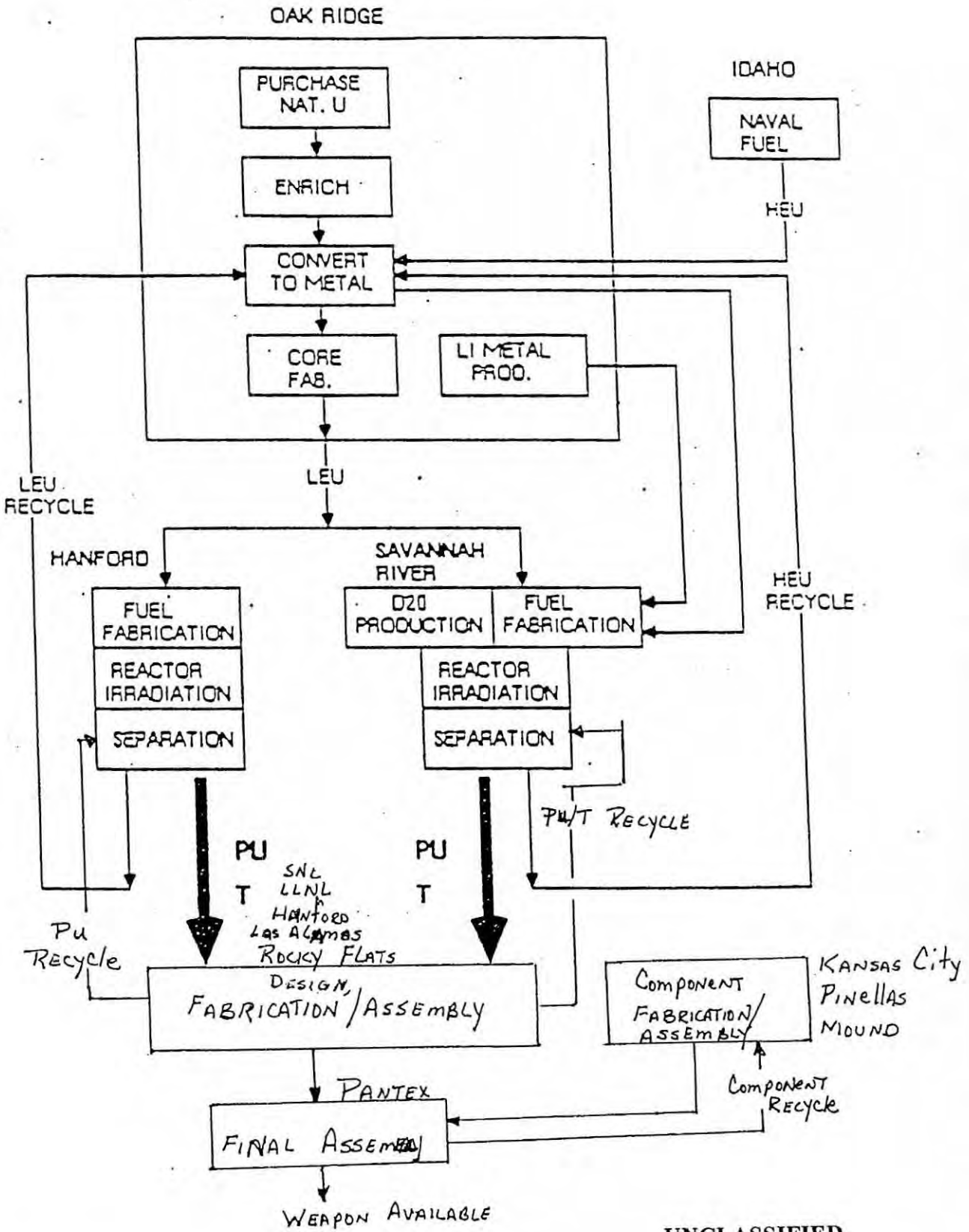
1952 Tritium production and extraction terminated at Hanford – 1st campaign

1954 Irradiated slugs processed at Hanford

1955 Eight months of tritium production and extraction at Hanford completed with extraction being terminated – 2nd campaign.

From 1949 through 1955 tritium produced and extracted at Hanford. From 1956 through 1973 slugs irradiated at Hanford for tritium and shipped to Savannah River for extraction.

Nuclear Material Production Complex



Hanford Tritium Production

Calendar Years 1945 - 1989

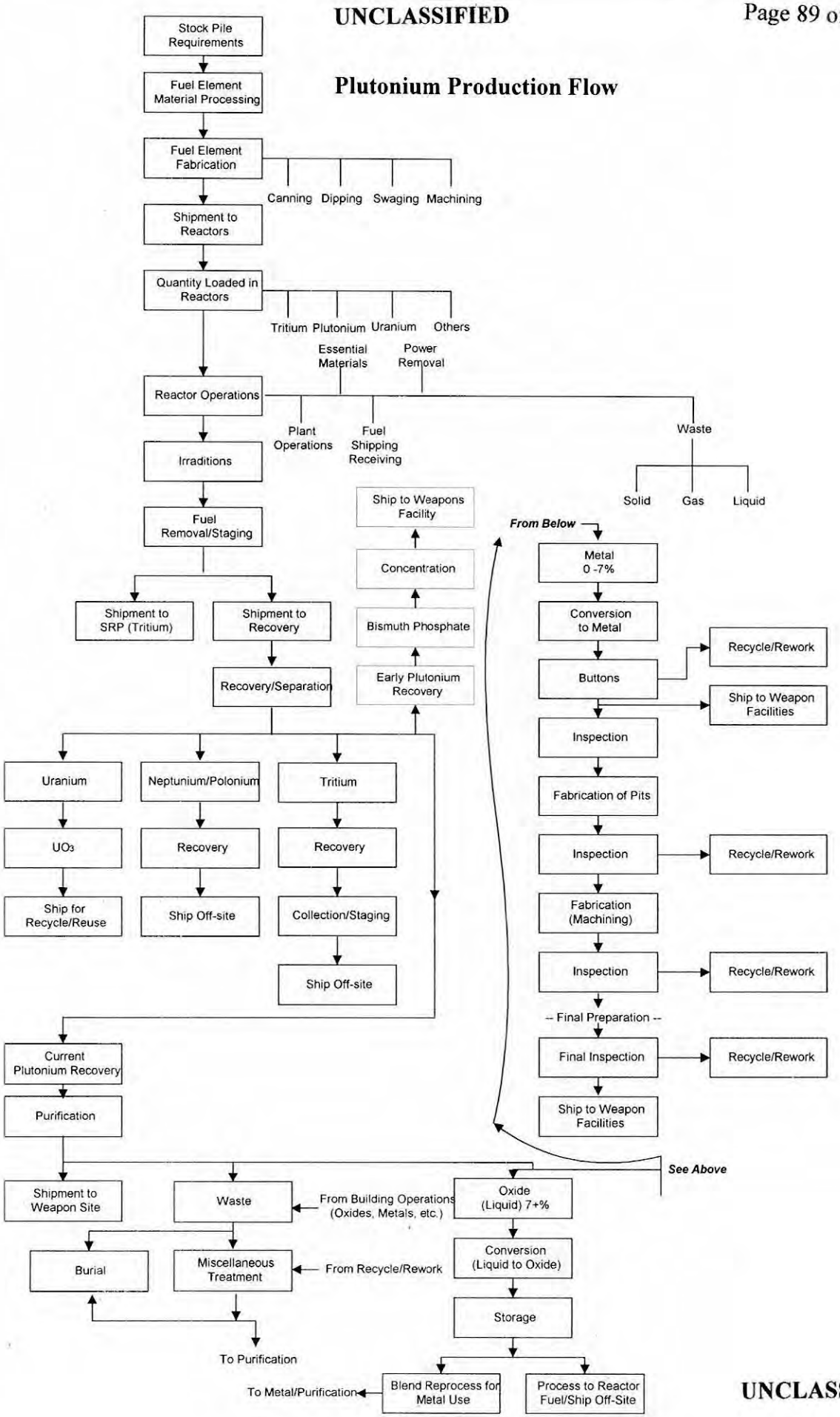
Year	Production, gms
1945	0
1946	0
1947	0
1948	0
1949[1]	2.5
1950	40
1951	161
1952	260
1953	518
1954	991
1955	145
1956	81
1957	76
1958	41
1959	212
1960	382
1961	293
1962	398
1963	1895
1964	2318
1965	796
1966	0
1967	1662
1968	2336
1969	350
1970	0
1971	90
1972	0
1973	
1974 - 1989	
Total	12.8 Kilograms (~13 kilograms)

1 Adjusted for previous years

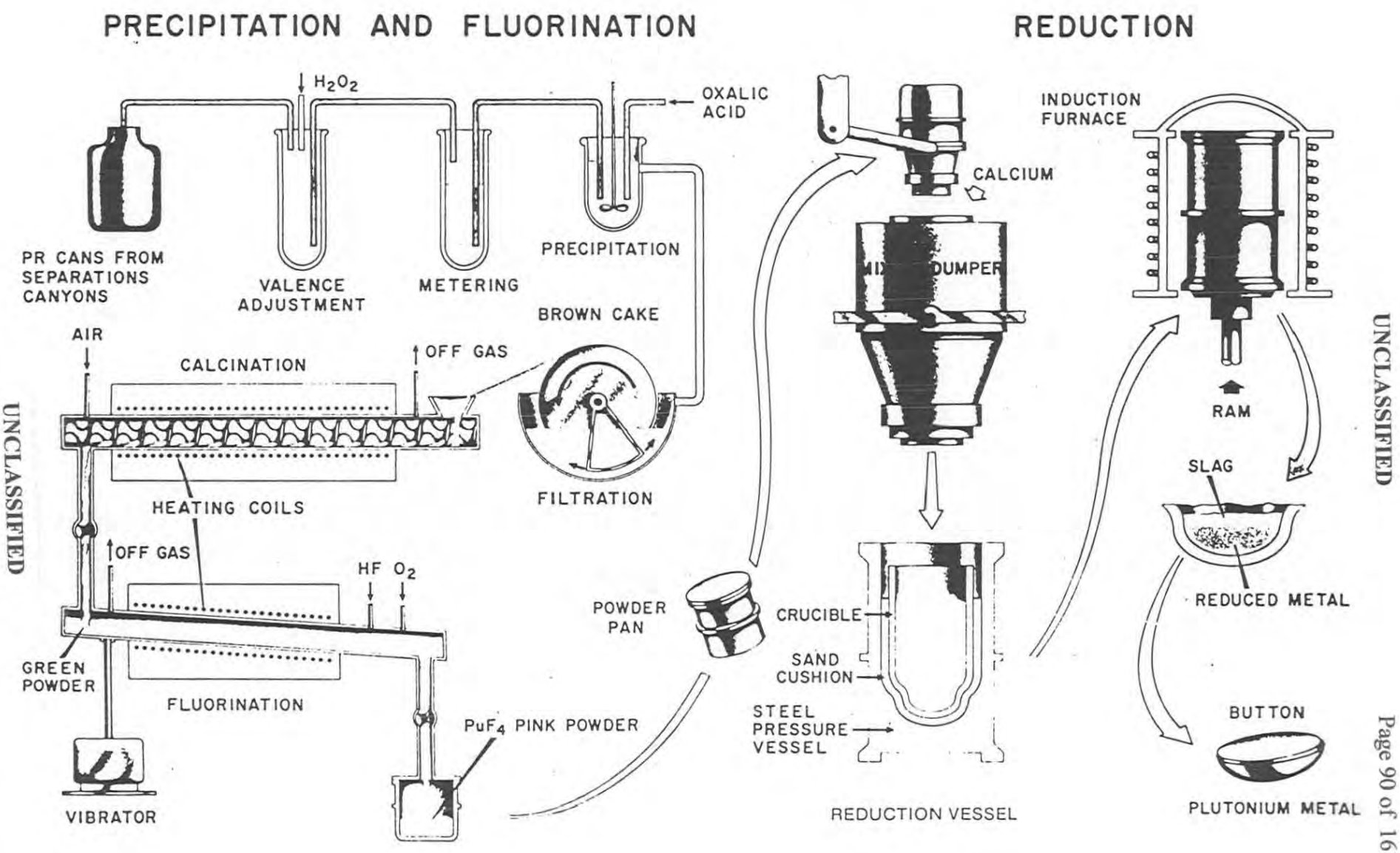
Savannah River Plutonium Production

Fiscal Year	Annual Total (Kg Pu)	Cumulative Total (Kg Pu)
1955	553	553
1956	1,151	1,704
1957	1,245	2,949
1958	672	3,621
1959	1,459	5,080
1960	1,734	6,814
1961	1,552	8,366
1962	1,578	9,944
1963	2,042	11,986
1964	2,123	14,109
1965	909	15,018
1966	1,304	16,320
1967	1,107	17,427
1968	1,253	18,680
1969	1,382	20,062
1970	872	20,934
1971	836	21,770
1972	1,028	22,798
1973	1,128	23,926
1974	1,226	25,152
1975	753	25,905
1976	1,400	27,305
1977	877	28,149
1978	835	28,984
1979	829	29,813
1980	1,010	30,823
1981	748	31,571
1982	793	32,264
1983	464	32,828
1984	809	33,637
1985	875	34,512
1986	935	35,447
1987	472	35,919
1988	152	36,071
1989	8	36,079

Plutonium Production Flow



PLUTONIUM CONVERSION TO METAL



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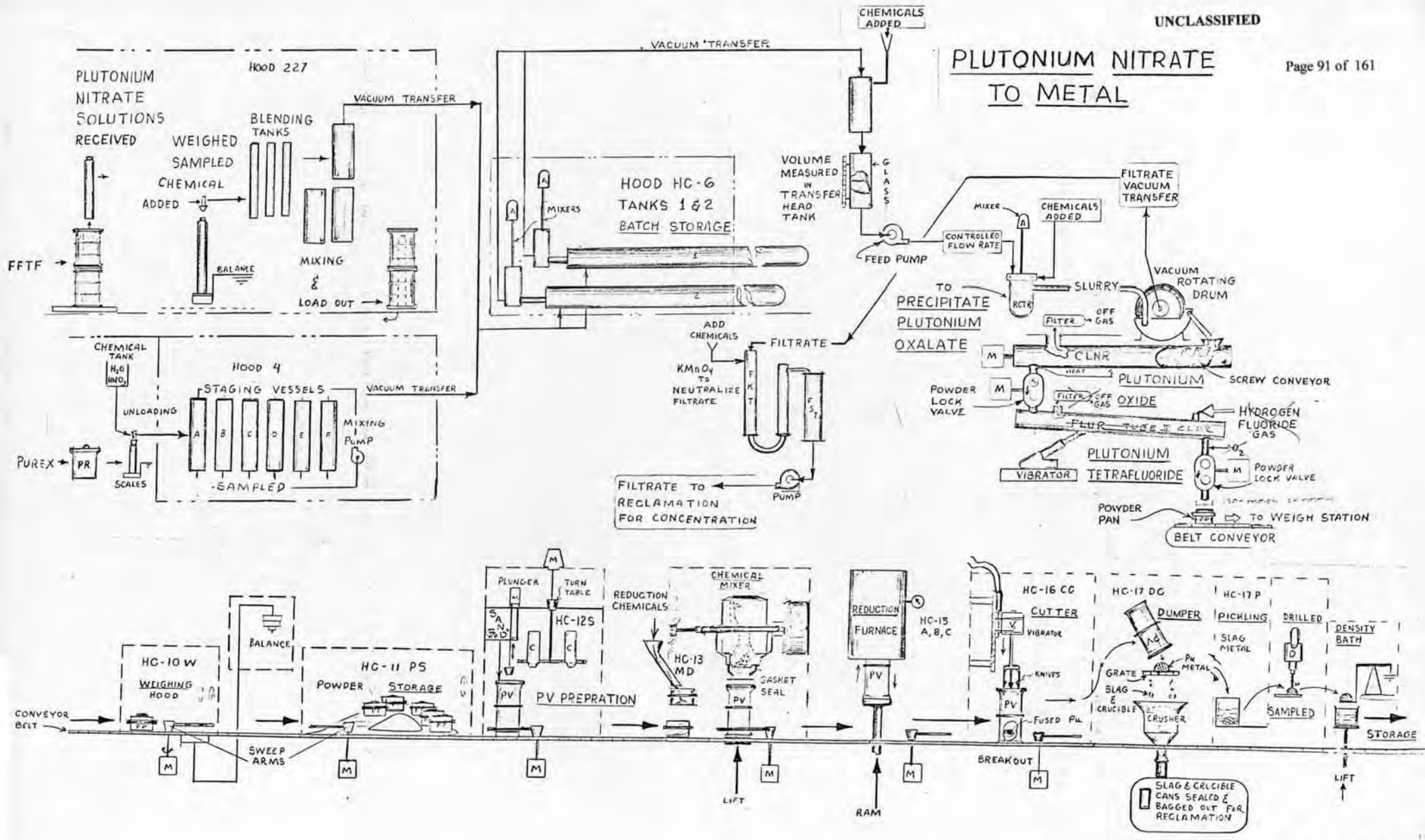
PLUTONIUM NITRATE TO METAL



HAA. 3-13-73

Hanford Plutonium Production[1,2]

Fiscal Year	Weapon Grade	Fuel[3] Grade	Annual Total	Cumulative Total
1947[4]	493	-	493	493
1948	183	-	183	676
1949	270	-	270	946
1950	392	-	392	1,338
1951	288	-	288	1,626
1952	662	-	662	2,288
1953	838	-	838	3,126
1954	1,113	-	1,113	4,239
1955	1,413	-	1,413	5,652
1956	2,074	-	2,047	7,726
1957	2,662	-	2,662	10,388
1958	3,303	-	3,303	13,691
1959	3,581	-	3,581	17,272
1960	4,266	-	4,266	21,538
1961	4,449	-	4,449	25,987
1962	4,169	-	4,169	30,156
1963	4,187	-	4,187	34,343
1964	4,247	256	4,503	38,846
1965	4,208	562	4,770	43,616
1966	3,130	800	3,390	47,546
1967	2,586	1,069	3,655	51,201
1968	1,494	1,530	3,023	54,224
1969	430	2,109	2,539	56,763
1970	977	707	1,684	58,447
1971	270	467	737	59,184
1972	-	414	414	59,598
1973	-	673	673	60,271
1974	-	607	607	60,878
1975	-	557	557	61,435
1976	-	429	429	61,864
1977	-	560	560	62,424
1978	-	559	559	62,983
1979	-	544	544	63,527
1980	-	413	413	63,940
1981	-	196	196	64,136
1982	-	449	449	64,585

Hanford Plutonium Production[1,2]

Fiscal Year	Weapon Grade	Fuel[3] Grade	Annual Total	Cumulative Total
1983	624	-	624	65,209
1984	294	-	294	65,503
1985	633	-	633	66,136
1986	934	-	934	67,070
1987	312	-	312	67,382
1988[5]	-21	-	-21	67,361
1989[5]	2	-	2	67,363

Notes:
1 All plutonium grade and total amounts in Kg's.
2 Plutonium: The First 50 years, US DOE, Page 26, 2/96
3 Fuel grade includes reactor grade plutonium.
4 Cumulated production since 1945.
5 Adjusted value - reactor vs process plants

MATERIAL REPORTING CHARACTERISTICS

Name of Material	Material Type Code	Reporting Weight Unit	Weight Fields Used Element	Isotope
Depleted Uranium	10[1]	Whole Kg	Total U	U-235
Enriched Uranium	20[2]	Whole Gm	Total U	U-235
Plutonium–242[3]	40[6]	Whole Gm	Total Pu	Pu-242
Americium–241	44	Whole Gm	Total Am	Am-241
Americium–243	45	Whole Gm	Total Am	Am-243
Curium	46	Whole Gm	Total Cm	Cm-246
Berkelium	47	Whole Microgram	–	Bk-249
Californium	48	Whole microgram	Total Cf	Cf-252
Plutonium	50	Whole Gm	Total Pu	Pu-239/241
Pu (<4% Pu-241)	51	Whole Gm	Total Pu	Pu-239/241
Pu (4 - <7% Pu-241)	52	Whole Gm	Total Pu	Pu-239/241
Pu (7 - <10% Pu-241)	53	Whole Gm	Total Pu	Pu-239/241
Pu (10 - <13% Pu-241)	54	Whole Gm	Total Pu	Pu-239/241
Pu (13 - <16% Pu-241)	55	Whole Gm	Total Pu	Pu-239/241
Pu (16 - <19% Pu-241)	56	Whole Gm	Total Pu	Pu-239/241
Pu (19% and greater Pu-241)	57	Whole Gm	Total Pu	Pu-239/241
Enriched Lithium	60[4]	Whole Kg	Total Li	Li-6
Uranium–233	70[5]	Whole Gm	Total U	U-233
Normal Uranium	81	Whole Kg	Total U 0.711%	U-235
Neptunium–237	82	Whole Gm	Total Np	--
Plutonium–238[7]	83	Gm to tenth	Total Pu	Pu-238
Deuterium[8]	86	Kg to tenth	D_2O	D_2
Tritium	87	Gm to hundredth	Total Tritium	--
Thorium	88	Whole Kg	Total Th	--
Uranium in Cascades	89	Whole Gm	Total U	U-235
Not assigned	90	Available for "local" use		

1. Codes 11 – 18 change depending upon % U^{235}
2. Codes 21 – 39 change depending upon % U^{235}
3. Code 41 for 20% thru 60% Pu^{242} and Code 42 for > 60% Pu^{242}
4. Codes 61 -- 63 change with % enrichment of lithium
5. Codes 71 – 74 change with % U^{232}
6. Report as Pu–242 if Pu-242 is 20% or greater of total Pu by weight; otherwise report as plutonium.
7. Report as Pu–238 if Pu-238 is greater than 10% of total Pu by weight; otherwise report as plutonium.
8. If heavy water, both element and isotope weight fields be used; otherwise report isotope weight only.

METRIC PREFIXES

Exponential Factor	Numerical Equivalent	Metric Prefix	Metric Symbol
10^{18}	1,000,000,000,000,000,000	exa	E
10^{15}	1,000,000,000,000,000	peta	P
10^{12}	1,000,000,000,000	tera	T
10^{9}	1,000,000,000	giga	G
10^{6}	1,000,000	mega	M
10^{3}	1,000	kilo	k
10^{2}	100	hecto	h
10^{1}	10	deka	da
10^{-1}	0.1	deci	d
10^{-2}	0.01	centi	c
10^{-3}	0.001	milli	m
10^{-6}	0.000001	micro	μ
10^{-9}	0.000000001	nano	n
10^{-12}	0.000000000001	pico	p
10^{-15}	0.000000000000001	femto	f
10^{-18}	0.000000000000000001	atto	a

NEUTRON ENERGY AND TYPE

Energy, Mev	Neutron Type
less than 10^{-10}	cold
10^{-10} to 2.5×10^{-8}	thermal
2.5×10^{-8} to 0.0001	slow
0.0001 to 0.1	intermediate
0.1 to 100.0	fast
greater than 100.0	ultra fast

AEC EMPLOYMENT and SALARY TREND

Location/Year	Employment(persons) 1948	1949	1950	1951	Average Salary (Dollars) 1948	1949	1950	1951
Washington	687	676	791	987	4,528	5,348	5,388	5,308
Chicago	237	244	269	303	3,542	4,202	4,784	4,940
Hanford	408	330	347	347	3,435	4,542	5,080	5,106
Idaho	-	25	248	419	-	2,364	3,649	4,449
New York	464	563	612	548	3,473	3,823	4,258	4,488
Oak Ridge	1,842	982	908	982	3,240	4,673	4,878	4,597
Santa Fe	1,224	1,366	1,367	1,407	3,122	3,978	4,999	5,306
Schenectady	63	63	69	50	3,381	4,200	4,295	4,786
Savannah River	-	-	-	228	-	-	-	4,324
San Francisco	-	-	-	30	-	-	-	5,413
Total	5,018	4,634	4,991	5,709	4,211	4,311	4,862	4,912

CONSTRUCTION OF A PLANT

Note: (The following is a complete copy I obtained from a DRAFT report that was prepared by an unknown individual during 1945 and it is unknown if it was ever presented or issued as a document. It does tell a portion of the Hanford story and I found it interesting.)

The construction of a *Plant* (Hanford Engineer Works) presented innumerable and unprecedented problems which were of necessity successfully overcome in the prosecution of the work. These problems stemmed from several basic requirements established by process research and development, engineering design, and policy. The principle factors which created these problems are enumerated as follows:

(1) The magnitude of the project.

(2) The distance between the several manufacturing plants to be constructed.

(3) The isolated location of the site

(4) The time element, which demanded that construction proceed without awaiting completion of the engineering design.

(5) The unusually high quality of construction required in many instances.

(6) The extreme and rigid requirements of military secrecy.

The effect of each of these factors is discussed briefly in the following paragraphs:

MAGNITUDE: The Hanford Engineer Works, as completed, consist of seven primary manufacturing areas with auxiliary and service facilities and the Richland Village. In addition to accomplishing its construction, many temporary buildings, facilities and services had to be provided. The largest of these was Hanford living quarters, which was paramount for the greatest segment of those working here. The magnitude of the work of construction is indicated by the following general items selected at random and given as approximate quantities for the entire project:

Excavation – Excavation amounted to 25,000,000 cubic yards of earth which quantity is approximately ¼ of the earth moved in the construction of the Fort Peck dam (located in Montana, on the Missouri River), the largest earth dam ever constructed.

Car Loads of Material Received – 40,000 car loads of material were received on the site equivalent to a train 333 miles long which is greater than the distance from Chicago to Louisville.

Concrete – More than 780,000 cubic yards of concrete were placed, which amount is

approximately equal to 390 miles of concrete highway 20 feet wide and 6 inches thick.

Steel – Excluding railroad rail and special steels, about 40,000 tons of steel were used in the building construction. This amount is equivalent to approximately the displacement of a battleship.

Lumber – Approximately 160,000,000 board feet of lumber were required. This is comparable to the yield from 135 acres of the best timberland.

Concrete Block and Cement Brick – About 1,500,000 concrete blocks and 750,000 cement blocks were used in the plant construction or sufficient to build a one foot by six foot wall over 30 miles long.

Power and Light Poles – More than 11,000 poles were required for the electric power and lighting systems or approximately the number required to build a single pole line from Chicago to St. Louis.

Major Construction Equipment – More than 8500 major pieces of construction equipment were required.

Electric Power – A total of about 1200 transformers were required with a primary capacity of more than 140,00 KVA which is approximately 2 sixth of the installed generating capacity of the Grand Coulee Dam.

Roads – Approximately 345 miles of permanent plant roads were constructed on the site, which is about the distance from Pittsburgh, Pa. to Richmond, Va.

Distances - The necessity for separating the several areas by relatively great distances from each other and from inhabited areas, imposed abnormal problems for transportation of men and materials. Since a large majority of the construction personnel lived at Hanford or Richland, the following road mileage tabulation indicates the magnitude of the problem. These distances are emphasized by the fact that 340,000,000 passenger-miles of bus transportation were furnished during the construction phase of the work. This is approximately equivalent to the transportation of 110,000 persons across the United States.

AREA	DISTANCE FROM RICHLAND (Miles)	DISTANCE FROM HANFORD (Miles)
100-B	38.0	17.7
100-D	37.4	10.8
100-F	30.2	8.3
200-E	28.7	9.3
200-W	30.5	13.9
200-N	31.0	10.8
300	7.4	16.2

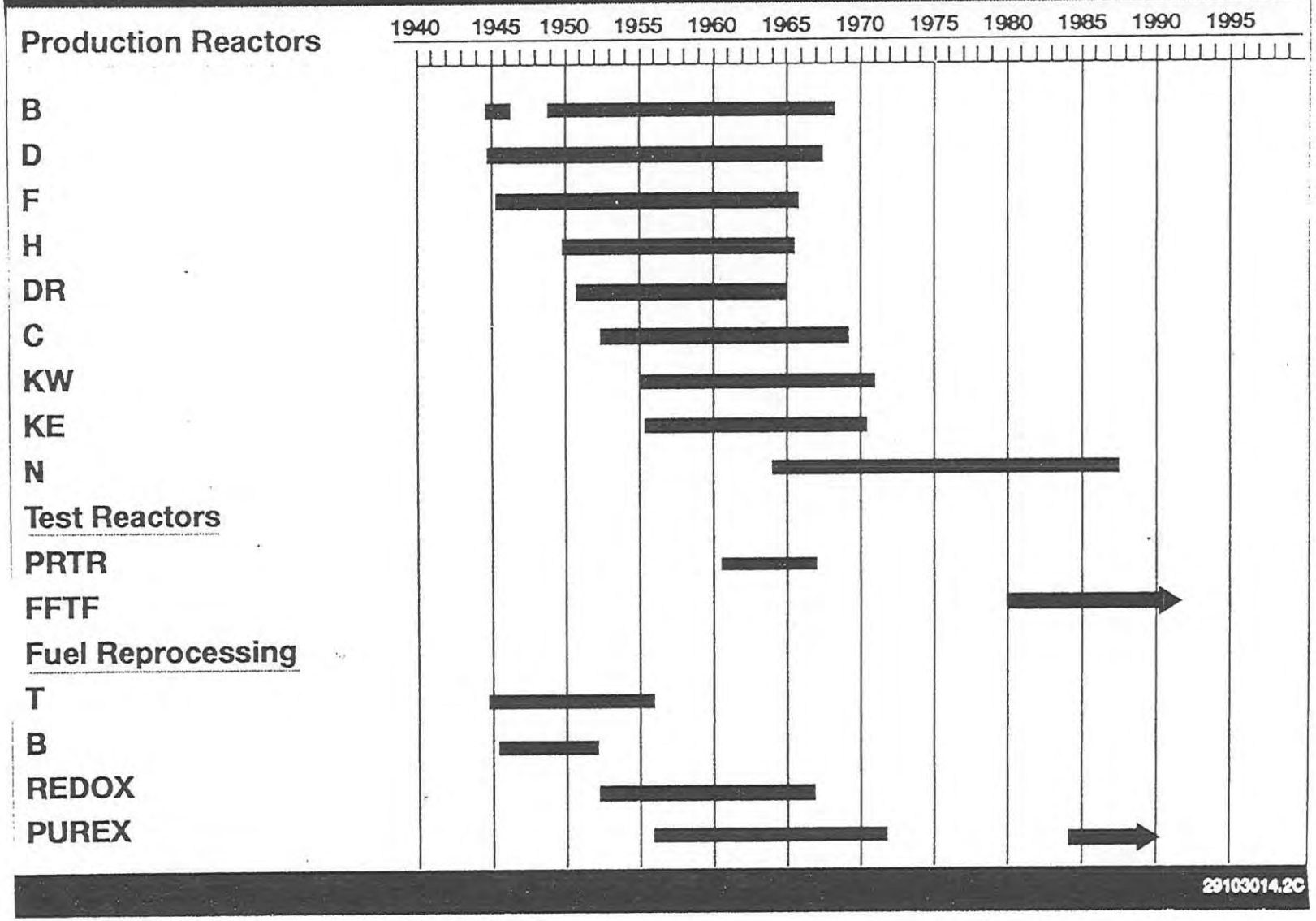
ISOLATION OF SITE: The isolation of the site from any existing centers of population presented serious problems with respect to many phases of construction. These problems were related primarily to the procurement, transportation, housing, feeding, health, morale, and retention of maximum total construction force of about 45,000 persons which number was reached in June of 1944.

TIME ELEMENT: The urgent need for placing the plant in operation at the earliest possible date precluded the possibility of delaying the start of construction work. In many instances, construction work was in progress during periods when basic research had not been fully developed. Consequently, the burden of construction planning, scheduling, and procurement was extremely great.

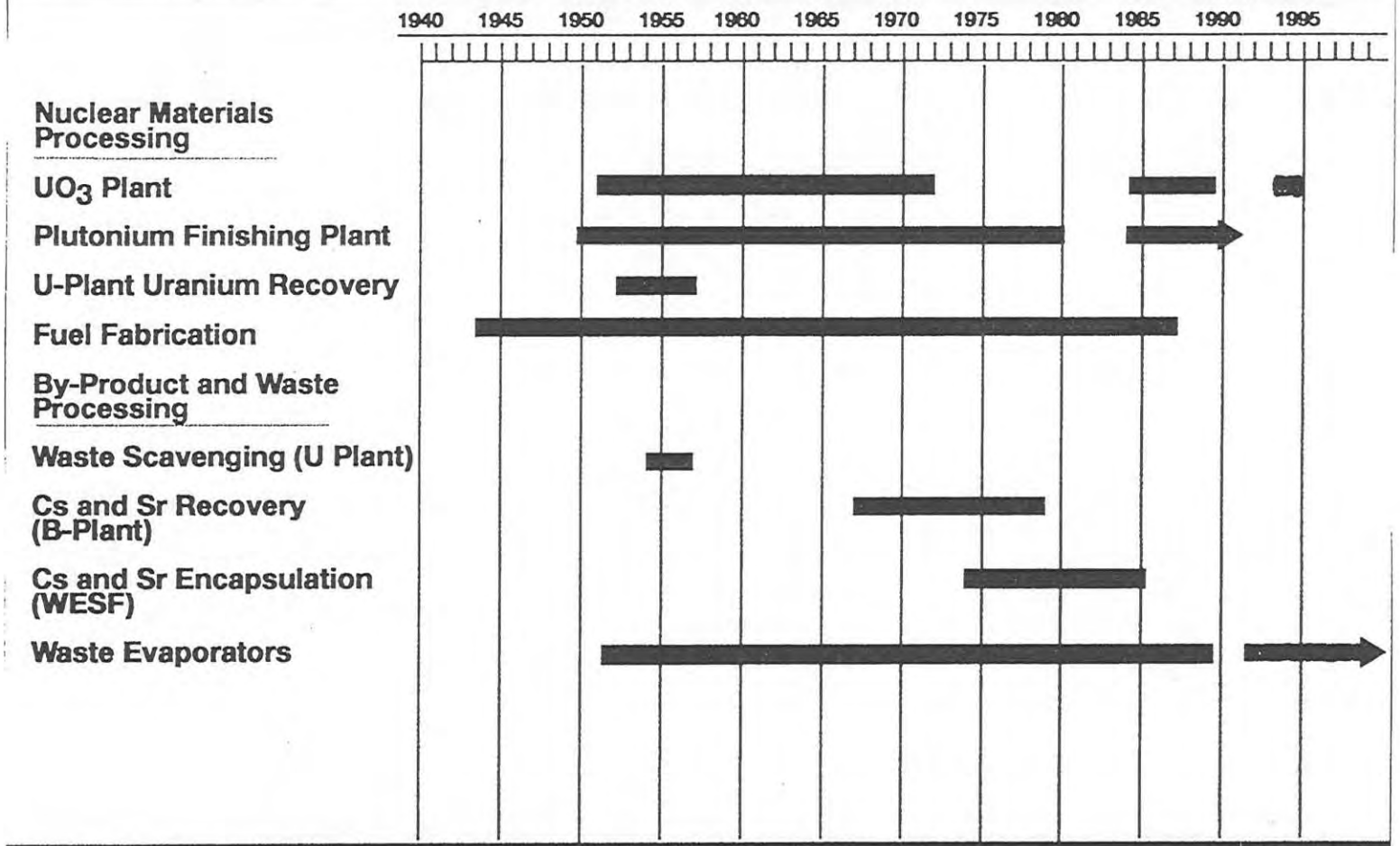
QUALITY OF CONSTRUCTION: The quality of construction demanded by the rigid requirements of the manufacturing processes was unusually high. This was particularly true of the pile (100) and separation (200) areas. Some of the important features are described under these headings. The problem of procuring an adequate number of craftsmen sufficiently skilled to perform the work was one of the most critical encountered and necessitated a special training program.

MILITARY SECRECY AND SECURITY: The rigid requirements of military secrecy imposed extremely great problems in the conduct of the work. It necessitated delay in employment of personnel because of the time required for investigation. It hindered the prosecution of the work because of the necessity of selective transmission of information to employees so that each individual received no more than was required to complete his assignments. It necessitated an elaborate system of patrol, guards, and pass and badge systems to assure that only authorized personnel were admitted to the working area.

Major Plant Operating Periods

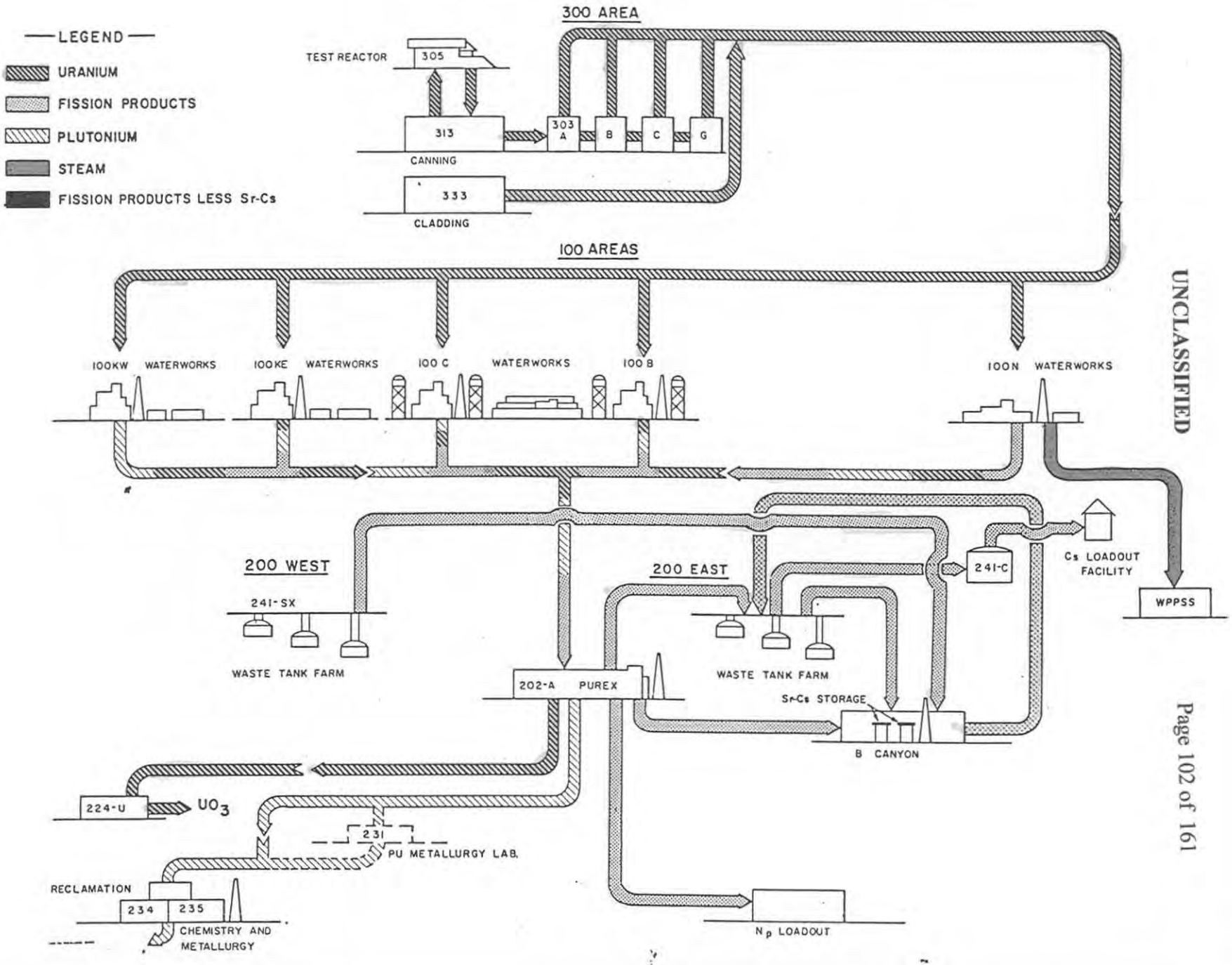


Major Plant Operating Periods Cont.



MATERIAL PRODUCTION SITE

PROCESS FLOW



UNCLASSIFIED

Summary of Businesses and Houses
1946 thru 1949

The following is a summary of the businesses and houses that were available in the Richland Village during 1946 – 1949.

Houses - $4000 class	2 & 3 bedroom	2950
- $6000 class	3 bedroom	500
- $7500 class	3 & 4 bedroom	144
Apartments	1 bedroom	300
	2 bedroom	100
Dormitories – 33 capacity – men		15
- 33 capacity – women		22
Transient Quarters – 113 capacity		1
Cafeteria – 500 seating capacity		1
Hospital – 54 bed		1
Central Food Store		1
Neighborhood Food Stores		2
Central Bakery Shop		1
Central Drug Store		1
Neighborhood Drug Stores		1
Central Shoe Repair Shop		1
Central General Merchandise, including Shoes and Men's Clothing		1
Central Women's and Children's apparel		1
Central Barber Shop		1
Neighborhood Barber Shops		2
Central Beauty Shop		1
Neighborhood Beauty Shops		2
Hardware Store (Present Bldg. 93X)		1
Variety Store		1
Milk Depot		1
Bank		1
Beer Parlor and Soft Drink Dispensary (Present Bldg.)		1
Central Garage and Service Station		1
Gas Stations		2
Post Office		1
Schools – High School (1) - Public Schools (3)		4
Laundry		1
Recreation Center		1
Fire, Police and Town Hall		1
Theater		1
Churches		2
Warehouses (1 Refrigerated)		3
Coal Distribution Yard		1

HOUSING PROVISIONS FOR HANFORD PERSONNEL

Family Groups Size – City of Richland

Family Size	Number of Families	Total Persons
2 persons	940	1,880
3 persons	1,061	3,183
4 persons	1,029	4,116
5 persons	540	2,700
6 persons	225	1,350
7 persons	64	448
8 persons	27	216
9 persons	15	135
10 persons	1	10
	3,902	14,038

Available Housing – City of Richland
(See available pictures/floor plans next pages)

House Type	No. Bedrooms	Monthly Rental Cost Furnished	Unfurnished
"A"	3	$47.00	$37.50
"B"	2	42.00	33.50
"C"	4	84.50	67.50
"E"	3	78.00	62.50
"F"	3	62.50	50.00
"G"	4	84.50	67.50
"H"	3	62.50	50.00
"L"	4	80.00	62.50
"M"	2	–	57.50
"Q"	3	–	72.50
"R"	3	–	72.50
"S"	4	–	85.00
"U"	2	–	45.00
"V"	3	–	50.00
Prefab	1	27.50	25.00
Prefab	2	35.00	30.00
Prefab	3	42.50	35.00
Dorm Apartments	1	35.00	–
Dorm Apartments (Murphy Bed)	–	30.00	–
Apartments	1	–	42.50

(Murphy Bed)			
Apartments	1	–	42.50
Dorm Room (inside) Single	–	15.00	–
Dorm Room (corner) Single	–	17.50	–
Dorm Room (inside) Double	–	11.25	–
Dorm Room (corner) Double	–	12.50	–

Furnishing Provided

Living Room

1 Rug and pad 9' x 19'
1 Kneehole desk
1 Occasional table
and mirror
1 Platform Rockers
1 Easy Chair
1 Three-way floor lamp
3 Table lamps

Dining Room

1 Table
6 Chairs
1 Cupboard
1 Rug – 7' x 8'

First Bedroom

Twin Beds
2 Bureaus and mirrors
1 Night table
2 Lamps
Throw-rugs

Second Bedroom

1 Double Bed
1 Bureau and mirror
1 Occasional Chair
Throw-rugs and lamps
1 Night table

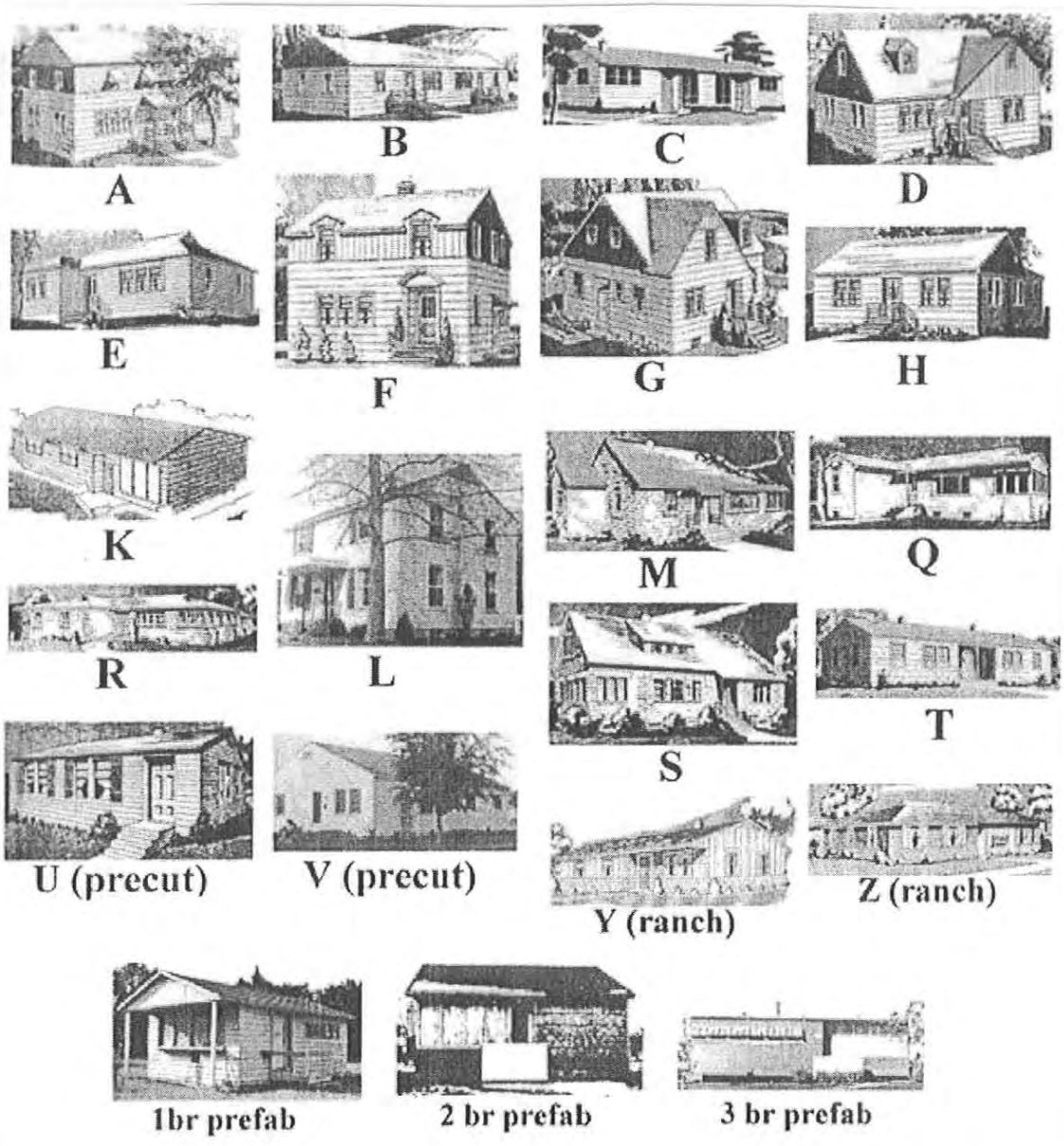
Third Bedroom

1 Three-quarter Bed
1 Bureau and mirror
1 Night table
Throw-rugs and lamps
1 Occasional chair

In addition to the furniture in the conventional type house, all prefabricated houses were purchased furnished. The majority of the furniture in the prefabricated houses was similar to the construction of the house itself. That is, plywood was extensively. Many of the chairs were of the folding type to provide more space in the house. Since space was the major requirement in a prefabricated house, furniture was selected which would take up as little space as possible. The beds, for example, had no head or foot, but were supported instead on six small legs. In the combined living-dining room, the table, when not in use, folded to a very small size.

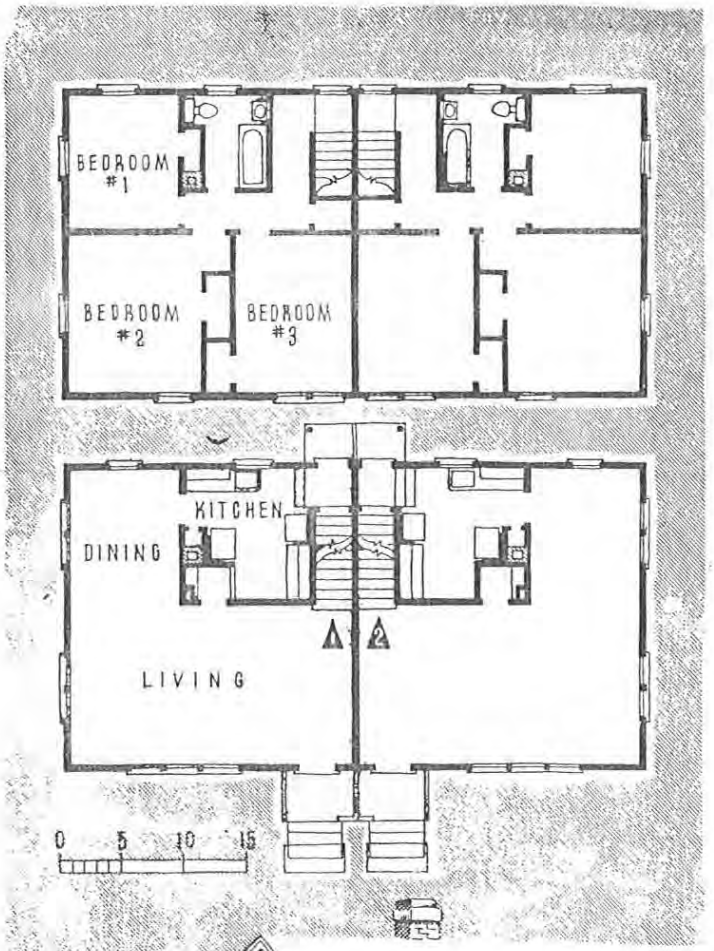
Practically all of the houses in Richland (conventional, prefabricated and existing houses) were provided with certain basic items of furnishing. These include an electric refrigerator, 8 KW electric stove, 50 feet water hose including a spray and nozzle, and a garbage can.

HANFORD PROJECT HOMES

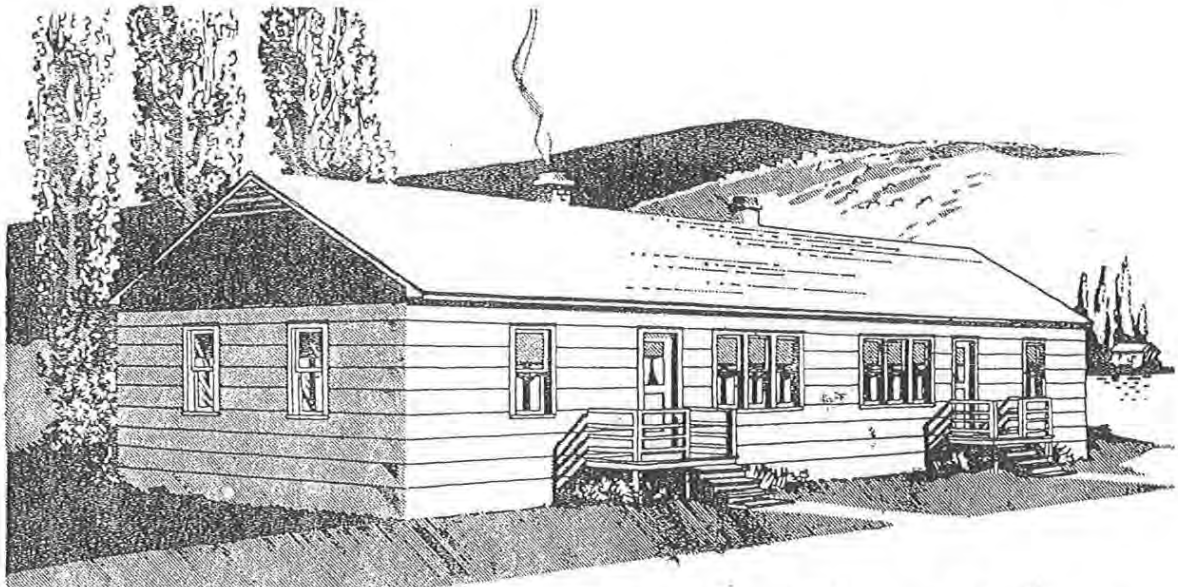


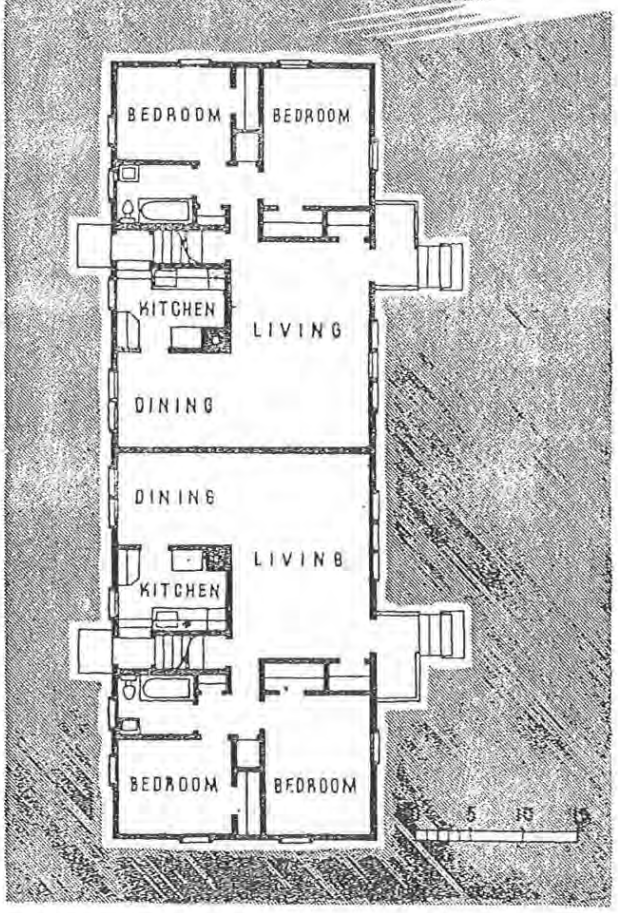
Two Family House

TYPE A UNIT



Type:	Two-Family Unit Two Stories Three Bedrooms	
Overall Size:	25' 0" x 47' 0"	
Rooms:	Size	Area
Basement		
Furnace)		
Fuel)	10' 6" x 19' 6"	205 Sq.Ft.
Laundry)		
Stairs	3' 0" x 10' 6"	31½
First Floor		
Living Room	12'10" x 22'10"	293
Closet	2' 8" x 3' 0"	7½
Dining Room	9' 0" x 11' 5"	103
Kitchen		89
10 lin. ft. worktop		
8 lin. ft. cupbd.		
Broom Closet	1' 9" x 1' 3"	2
Stair Area		34½
Second Floor		
Bedroom #1	9' 0" x 11' 0"	99
Closet	1' 7" x 3' 4"	5
Bedroom #2	11' 5" x 12'10"	154
Closet	1' 9" x 5' 5"	9½
Bedroom #3	9' 0" x 12'10"	115
Closet	1' 9" x 4' 0"	7
Bathroom		47½
Hall and Stairs		83½
Linen Closet		6½





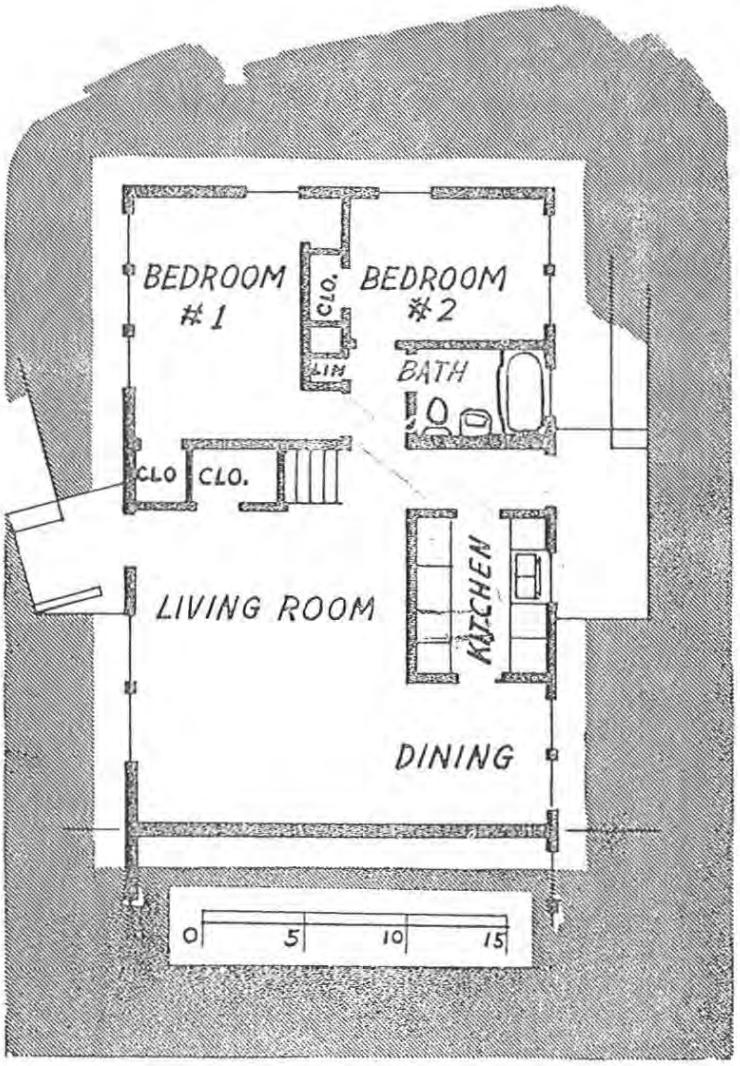
Two Family Duplex

TYPE B UNIT

Type:	Two-Family Unit One Story Two Bedrooms	
Overall Size:	24'6" x 72'0"	1764 square feet
Rooms:	Size	Area
Basement Laundry) Furnace) Fuel	20'10" x 23'6"	490 square feet
Stairs	3' 0" x 10'0"	30
First Floor		
Living Room	13'0" x 19'0"	247
Coat Closet	2'6" x 4'0"	10
Stair Closet	3'0" x 3'4"	10
Dining Room	8'6" x 10'6"	89
Kitchen 8 lin. ft. worktop 10½ lin. ft. cupbd.	7'6" x 10'0"	75
Hall		30
Linen Closet	2'2" x 2'10"	6
Broom Closet	1'8" x 2' 4"	4
Bedroom #1	9'11" x 12'11"	128
Closet	2' 6" x 5' 3"	13
Bedroom #2	9' 9" x 10' 7"	103
Closet	2' 2" x 5' 6"	12
Bath	5' 6" x 7' 2"	39½
Stair	3' 0" x 6' 3"	18

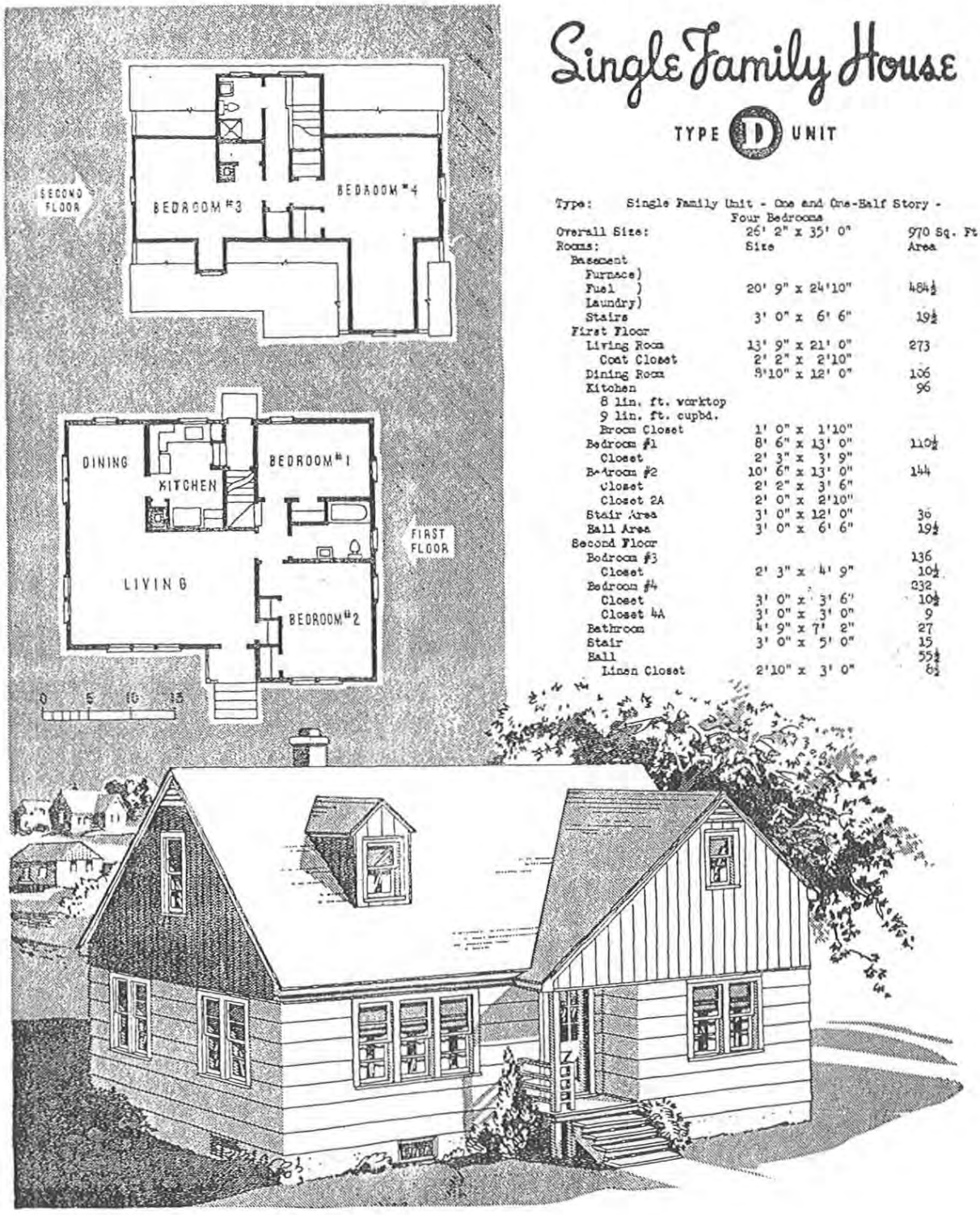
Two Family House

TYPE C UNIT



Type:		Two - Family Unit One Story Two Bedrooms
Overall Size	24' X 36'	
Rooms	Size	Area
Basement - Laundry, Furnace, Fuel		747 sq. ft.
Stairs		48 sq. ft.
First Floor		
Living Room	15' 0" X 17' 7"	264 sq. ft.
Closet	2' 10" X 5' 0"	10½ sq. ft.
Dining Room	8' 1" X 7' 11"	64 sq. ft.
Kitchen 11 lin. ft. Work Top 12 lin. ft. Cupboard	8' 10" X 3' 7"	31½ sq. ft.
Broom Closet	2' 0" X 2' 0"	4 sq. ft.
Back Hall	3' 4" X 11' 3"	37 sq. ft.
Hall	3' 0" X 5' 9"	17 sq. ft.
Linen Closet	1' 9" X 2' 0"	3½ sq. ft.
Bedroom #1	9' 8" X 14' 0"	135 sq. ft.
Closet	3' 0" X 2' 0"	6 sq. ft.
Closet	3' 0" X 2' 10"	8½ sq. ft.
Bedroom #2	11' 1" X 8' 4"	92 sq. ft.
Closet	3' 10" X 2' 0"	7½ sq. ft.
Bath	4' 11" X 5' 0"	25 sq. ft.
Stair	4' 0" X 3' 0"	12 sq. ft.

Total Houses - 170
Full Basement - Oil Heat

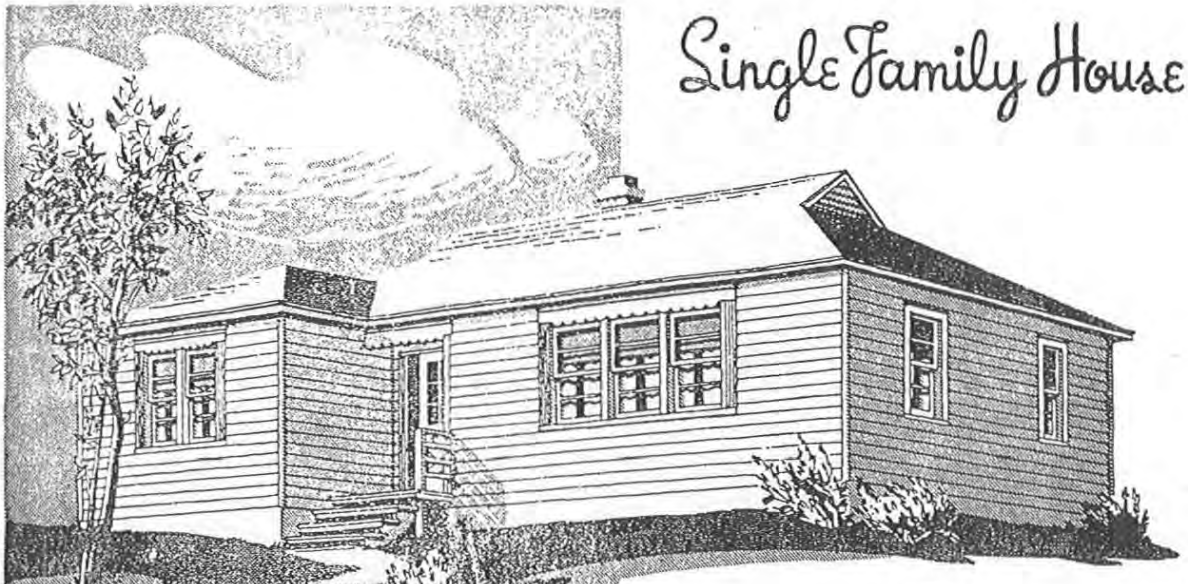


Single Family House

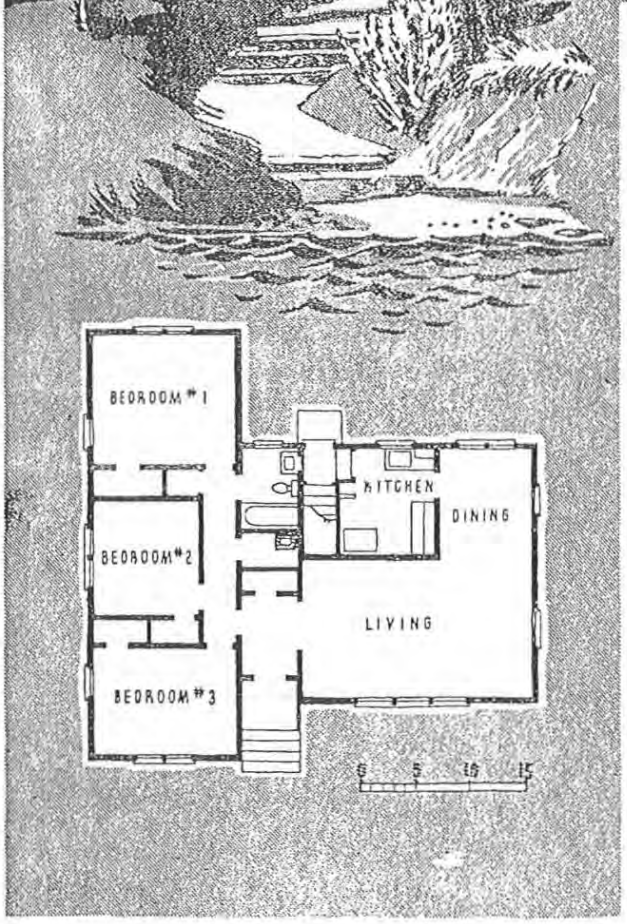
TYPE D UNIT

Type:	Single Family Unit - One and One-Half Story - Four Bedrooms	
Overall Size:	26' 2" x 35' 0"	970 Sq. Ft.
Rooms:	Size	Area
Basement		
Furnace)		
Fuel)	20' 9" x 24'10"	484½
Laundry)		
Stairs	3' 0" x 6' 6"	19½
First Floor		
Living Room	13' 9" x 21' 0"	273
Coat Closet	2' 2" x 2'10"	
Dining Room	9'10" x 12' 0"	106
Kitchen		96
8 lin. ft. worktop		
9 lin. ft. cupbd.		
Broom Closet	1' 0" x 1'10"	
Bedroom #1	8' 6" x 13' 0"	110½
Closet	2' 3" x 3' 9"	
Bedroom #2	10' 6" x 13' 0"	144
Closet	2' 2" x 3' 6"	
Closet 2A	2' 0" x 2'10"	
Stair Area	3' 0" x 12' 0"	36
Hall Area	3' 0" x 6' 6"	19½
Second Floor		
Bedroom #3		136
Closet	2' 3" x 4' 9"	10½
Bedroom #4		232
Closet	3' 0" x 3' 6"	10½
Closet 4A	3' 0" x 3' 0"	9
Bathroom	4' 9" x 7' 2"	27
Stair	3' 0" x 5' 0"	15
Hall		55½
Linen Closet	2'10" x 3' 0"	8½

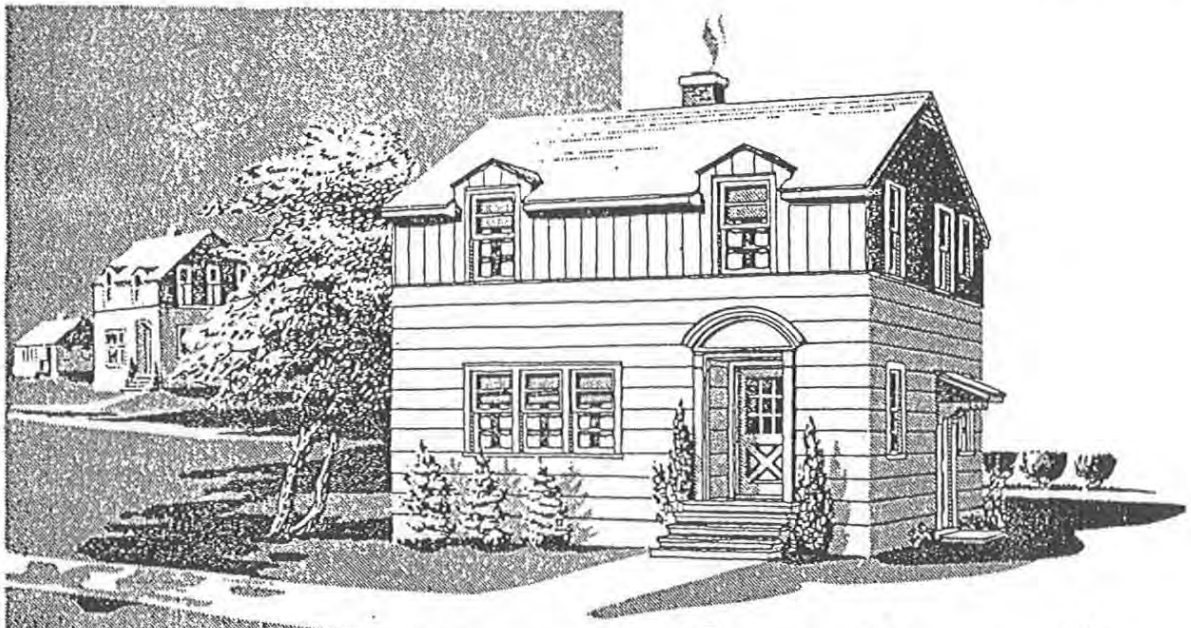
Single Family House

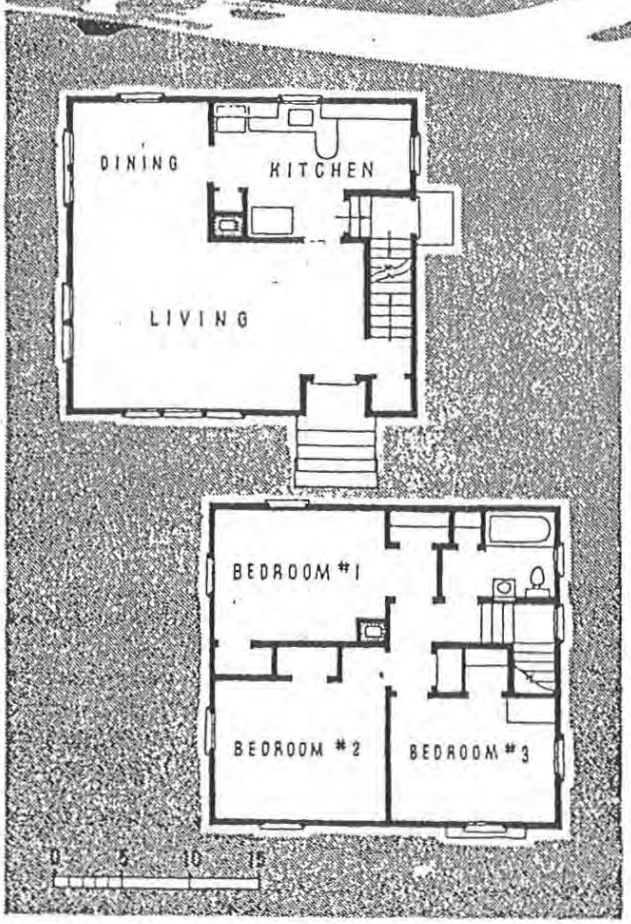


TYPE E UNIT



Type:	Single Family Unit One Story Three Bedrooms	
Overall Size:	39' 6" x 41' 0"	
Rooms:	Size	Area
Basement		
Furnace) Fuel) Laundry)	22' 8" x 26' 6"	562
Stairs	3' 0" x 7' 0"	21
First Floor		
Living Room	13' 0" x 21'11"	272
Closet	2' 6" x 5' 2"	12½
Dining Room	8' 3" x 9' 10"	74½
Kitchen 6½ lin. ft. worktop 7 lin. ft. cupbd.		78½
Broom Closet	1' 2" x 1' 4"	1½
Bedroom #1	12' 0" x 13' 3"	159
Closet	2' 6" x 6' 5"	15
Bedroom #2	9'10" x 10' 6"	95
Closet	2' 3" x 5' 3"	10½
Bedroom #3	10' 0" x 13' 3"	132½
Closet	2' 3" x 4' 5"	7
Bath	5' 2" x 7' 8"	38
Hall		97½
Linen Closet	2' 6" x 3' 2"	7½
Closet	2' 9" x 5' 2"	13½
Stair	3' 0" x 6' 6"	19½

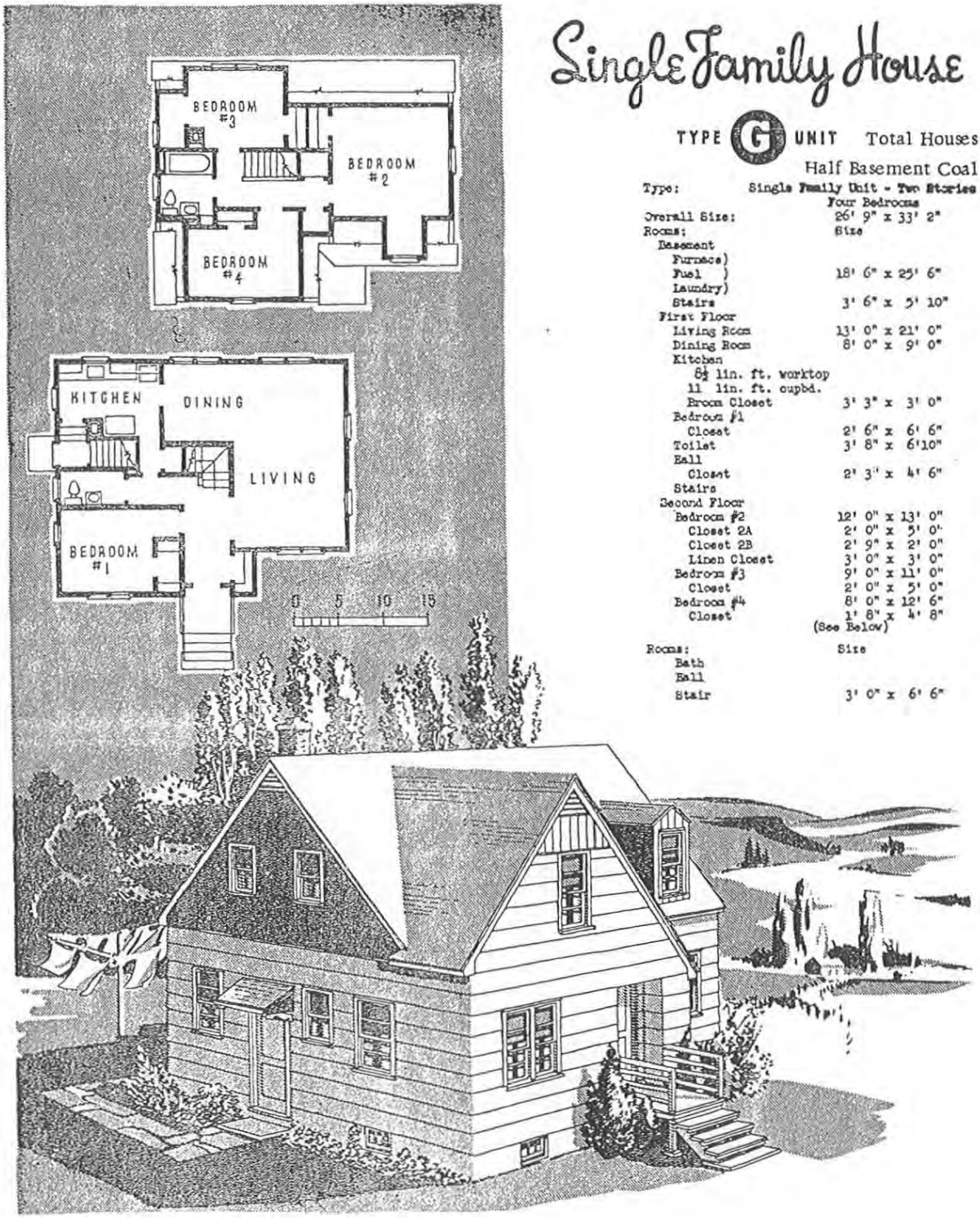




Single Family House

TYPE E UNIT

Type:	Single Family Unit Two Stories Three Bedrooms	
Overall Size:	23' 8" x 25' 8"	
Rooms:	Size	Area
Basement		
Furnace) Fuel) Laundry)	14' 2" x 22' 4"	312 square feet
Stairs	3' 0" x 6' 6"	19½
First Floor		
Living Room		270
Coat Closet	2' 6" x 3' 0"	7½
Dining Room	10' 2" x 10' 6"	105
Kitchen		119½
14' lin. ft. worktop 10½ lin. ft. cupbd. Broom Closet	1' 6" x 2' 0"	3
Hall	3' 0" x 4' 6"	13½
Stair	3' 6" x 6' 9"	23½
Second Floor		
Bedroom #1	10' 0" x 12' 4"	123
Closet	2' 0" x 4' 3"	8½
Bedroom #2	10' 0" x 12' 4"	123
Closet	2' 0" x 4' 3"	8½
Bedroom #3	9' 0" x 12' 0"	108
Closet	3' 0" x 3' 0"	6
Bath		42
Closet	2' 3" x 1' 10"	3
Hall and Stairs	2' 0" x 3' 0"	6
Linen Closet	2' 0" x 3' 0"	6
Closet	2' 3" x 4' 4"	9½

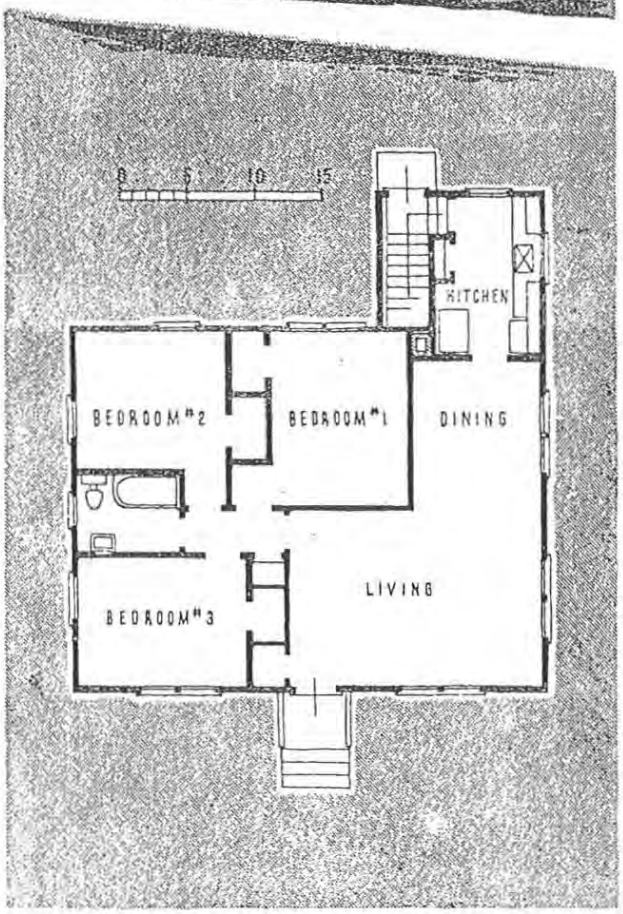


Single Family House

TYPE G UNIT Total Houses - 8

Half Basement Coal Heat

Type:	Single Family Unit - Two Stories - Four Bedrooms	
Overall Size:	26' 9" x 33' 2"	
Rooms:	Size	Area
Basement		
Furnace)		
Fuel)	18' 6" x 25' 6"	441 Sq. Ft.
Laundry)		
Stairs	3' 6" x 5' 10"	18
First Floor		
Living Room	13' 0" x 21' 0"	273
Dining Room	8' 0" x 9' 0"	72
Kitchen		88
6½ lin. ft. worktop		
11 lin. ft. cupbd.		
Broom Closet	3' 3" x 3' 0"	6½
Bedroom #1		114
Closet	2' 6" x 6' 6"	15
Toilet	3' 8" x 6'10"	23
Hall		81
Closet	2' 3" x 4' 6"	9
Stairs		45
Second Floor		
Bedroom #2	12' 0" x 13' 0"	169
Closet 2A	2' 0" x 5' 0"	10
Closet 2B	2' 9" x 2' 0"	5½
Linen Closet	3' 0" x 3' 0"	9
Bedroom #3	9' 0" x 11' 0"	110
Closet	2' 0" x 5' 0"	10
Bedroom #4	8' 0" x 12' 6"	109
Closet	1' 8" x 4' 8" (See Below)	6
Rooms:	Size	Area
Bath		39
Hall		48
Stair	3' 0" x 6' 6"	19½

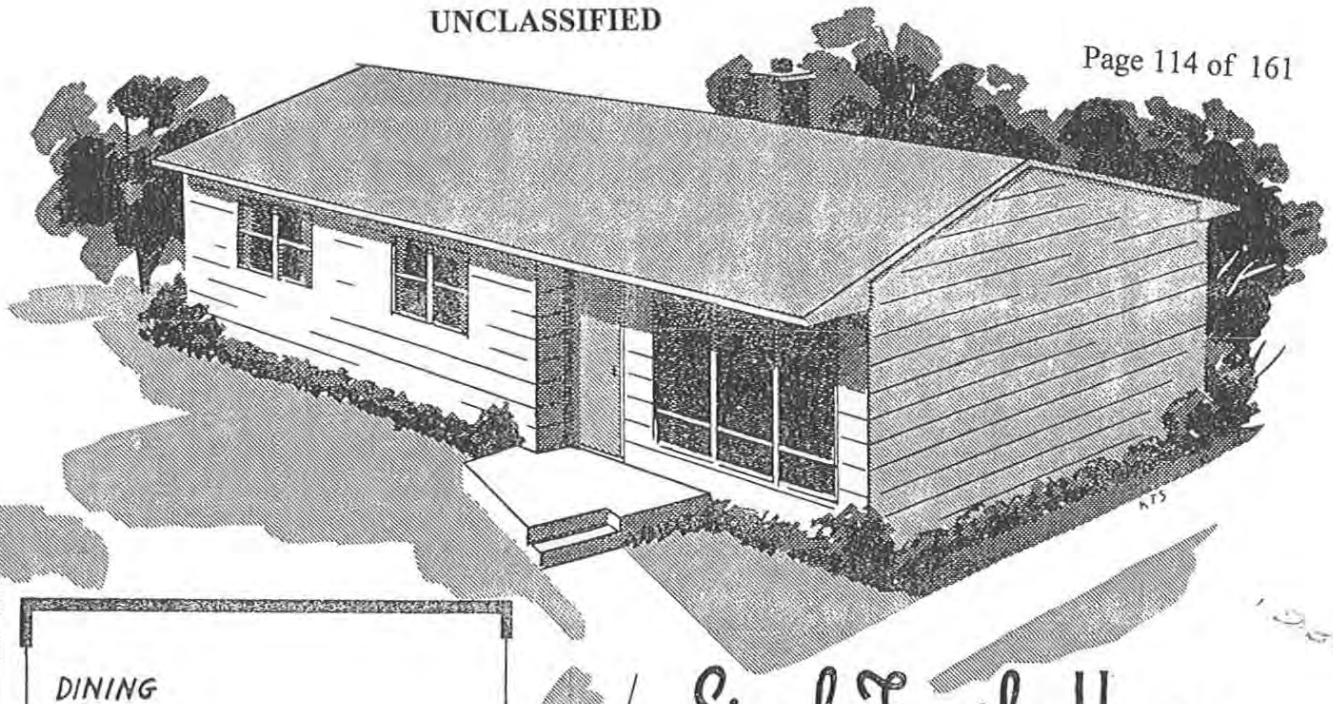


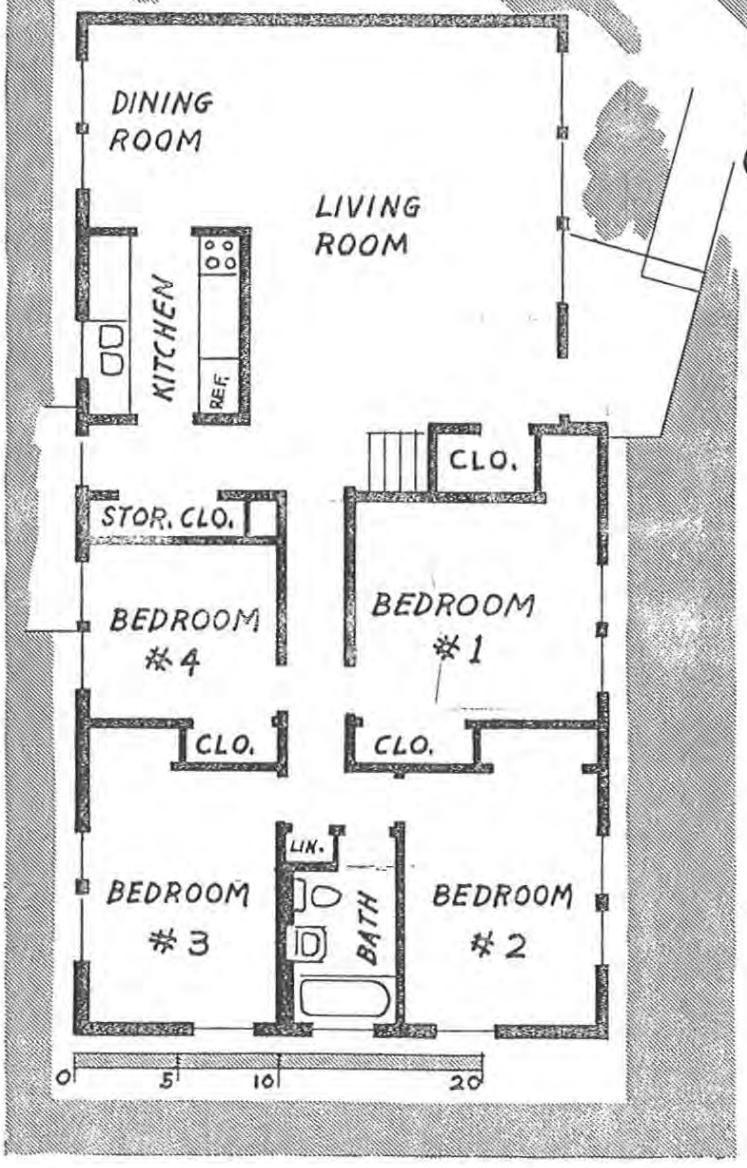
Single Family House

TYPE H UNIT

ONE STORY•THREE BEDROOMS

Type:	Single Family Unit One Story Three Bedrooms	
Overall Size:	34'11" x 37' 0"	
Rooms:	Size	Area
Basement Furnace) Fuel) Laundry)		310½ square feet
Stairs		33
First Floor		
Living Room	13' 0" x 18' 6"	240½
Closet	2' 4" x 3' 0"	7
Dining Room	9' 6" x 11' 0"	104½
Kitchen 9 lin. ft. worktop 8 lin. ft. cupbd.		83
Broom Closet	1' 3" x 3' 0"	3½
Bath	5' 9" x 7' 6"	37½
Bedroom #1	10' 0" x 12'10"	133
Closet	2' 6" x 4' 6"	10
Bedroom #2	10' 0" x 11' 0"	118
Closet	2' 6" x 4' 6"	10
Bedroom #3	9' 6" x 12' 6"	114
Closet	2' 4" x 4' 0"	9
Hall	3' 0" x 7' 3"	21½
Closet	2' 0" x 2' 4"	4½
Stair		31



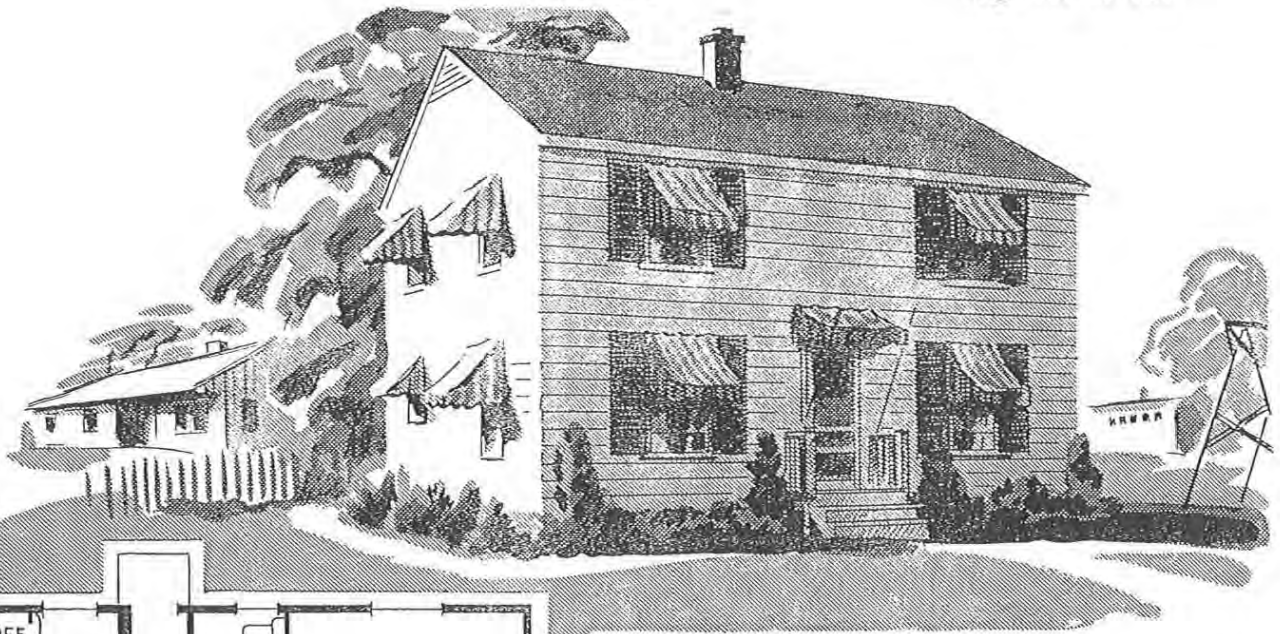


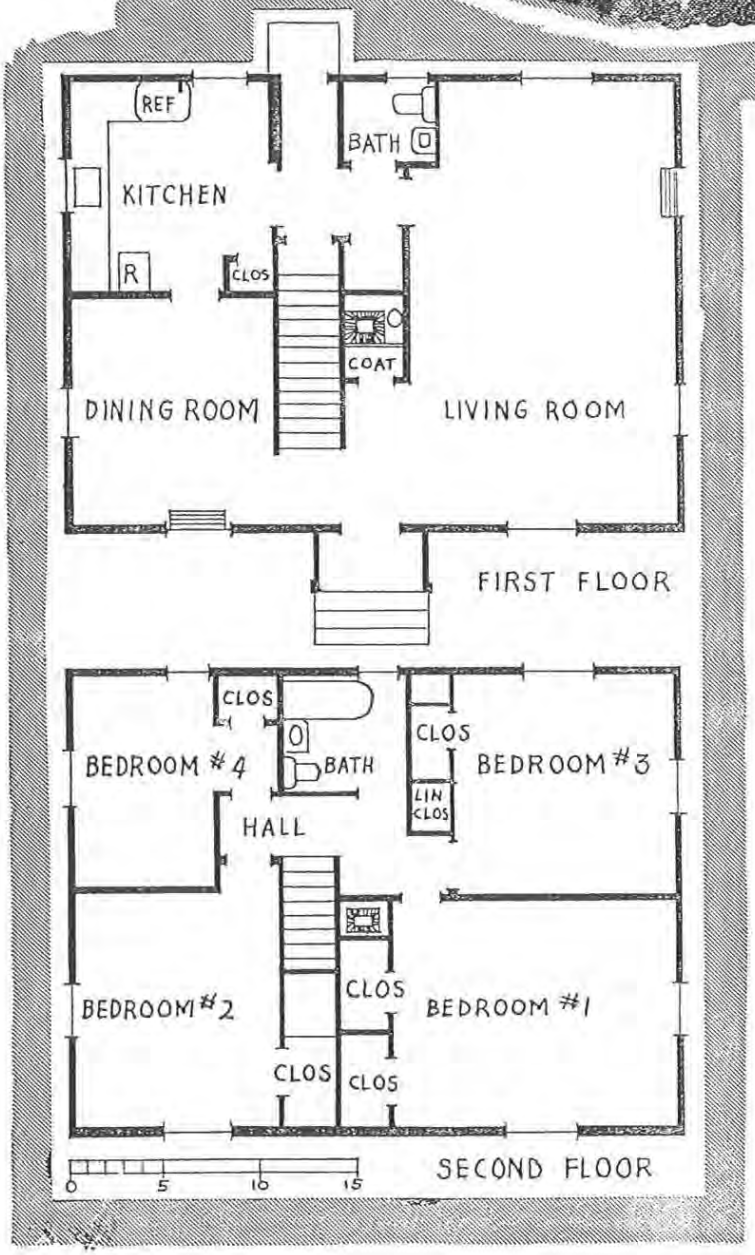
Single Family House

TYPE K UNIT

Type:		Single Family Unit One Story Four Bedrooms
Overall Size:	26' X 50'	
Rooms	Size	Area
Basement: Furnace, Fuel, Laundry		1102 sq. ft.
Stairs		48 sq. ft.
First Floor		
Living Room	19' 8" X 15' 3"	301 sq. ft.
Closet	3' 0" X 5' 0"	15 sq. ft.
Dining Room	10' 1" X 9' 0"	91 sq. ft.
Kitchen	8' 10" X 3' 7"	31½ sq. ft.
13 lin. ft. Worktop		
14 lin. ft. Cupboard		
Back Hall	3' 3" X 13' 0"	42 sq. ft.
Storage Closet	2' 0" X 8' 0"	16 sq. ft.
Bedroom #1	10' 8" X 12' 0"	128 sq. ft.
Closet	5' 9" X 2' 0"	12 sq. ft.
Closet	3' 0" X 3' 0"	9 sq. ft.
Bedroom #2	12' 6" X 9' 7"	120 sq. ft.
Closet	5' 9" X 2' 0"	12 sq. ft.
Bedroom #3	12' 6" X 9' 8"	121 sq. ft.
Closet	4' 8" X 2' 0"	9½ sq. ft.
Bedroom #4	8' 9" X 9' 8"	85 sq. ft.
Closet	4' 8" X 2' 0"	9½ sq. ft.
Bath	5' 0" X 6' 7"	33 sq. ft.
Hall	3' 0" X 16' 6"	50 sq. ft.
Linen Closet	1' 2" X 2' 4"	2½ sq. ft.
Stair	4' 0" X 3' 0"	12 sq. ft.

Total Houses - 60
Full Basement - Oil Heat





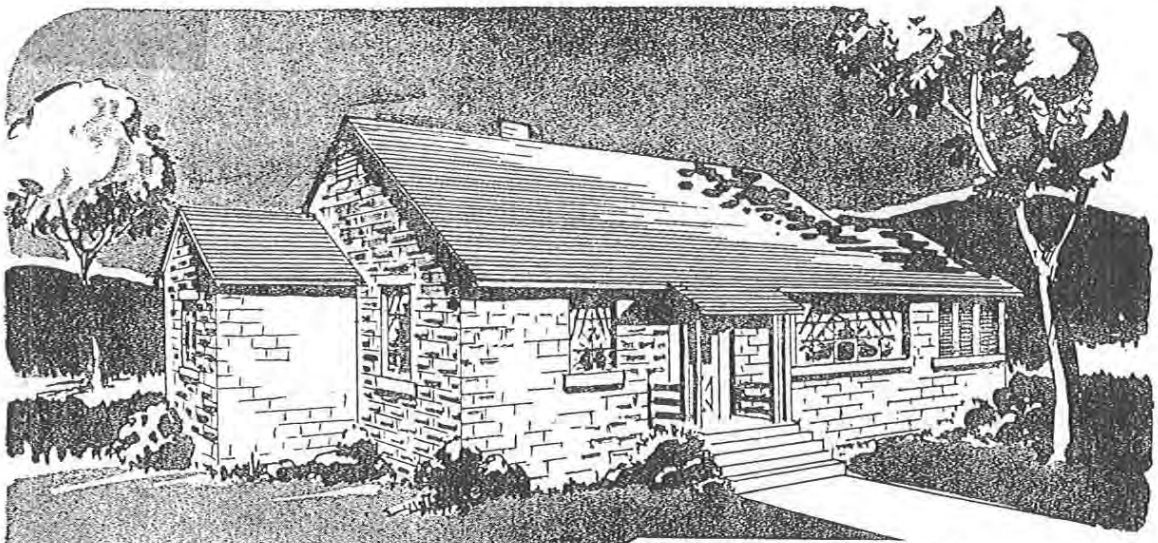
Single Family House

TYPE L UNIT

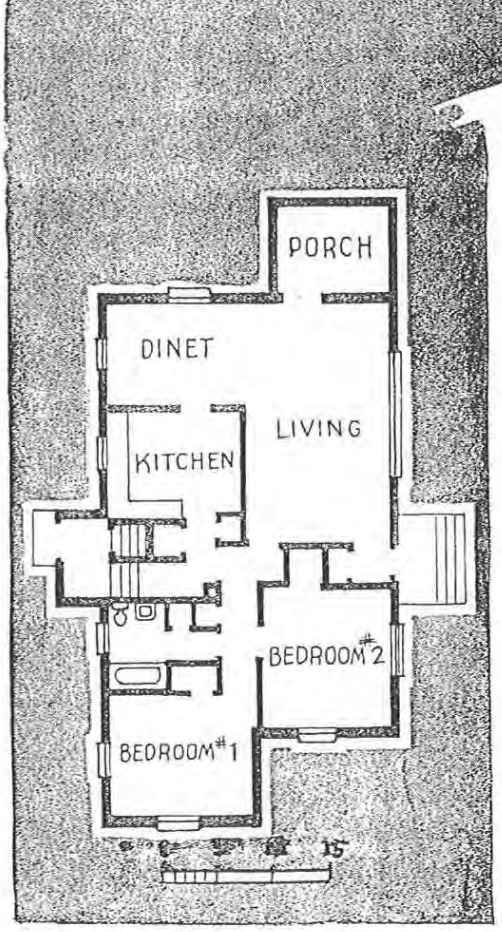
Type:	Single Family Unit Two Story Four Bedrooms	
Overall Size		24' 0" x 32' 0"
Rooms	Size	Area
Basement	None	None
Furnace	16' 9" x 22' 6"	37 sq. ft.
Fuel		
Laundry		
Stair	3' 0" x 6' 0"	18 sq. ft.
First Floor		
Living Room	13' 6" x 23' 0"	310 sq. ft.
Coat Closet	1' 8" x 3' 0"	5 sq. ft.
Dining Room	10' 6" x 11' 9"	123 sq. ft.
Kitchen		
10½ Lin. Ft. Worktop		
10½ Lin. Ft. Cupboard		
Broom Closet	1' 6" x 2' 0"	3 sq. ft.
Toilet	4' 0" x 4' 8"	19 sq. ft.
Hall		48 sq. ft.
Closet	2' 6" x 3' 0"	7½ sq. ft.
Stair	3' 0" x 11' 0"	33 sq. ft.
Second Floor		
Bedroom #1	11' 3" x 14' 6"	165 sq. ft.
Closets	2' 0" x 9' 0"	18 sq. ft.
Bedroom #2	10' 6" x 11' 9"	123 sq. ft.
Closets	3' 0" x 7' 9"	23 sq. ft.
Bedroom #3	11' 3" x 11' 3"	132 sq. ft.
Closets	2' 0" x 5' 3"	10½ sq. ft.
Bedroom #4	7' 4" x 10' 9"	80 sq. ft.
Closets	2' 6" x 3' 0"	7½ sq. ft.
Bath	6' 0" x 6' 0"	36 sq. ft.
Hall		40 sq. ft.
Linen Closet	2' 0" x 2' 6"	5 sq. ft.
Stair	3' 0" x 6' 0"	18 sq. ft.

UNCLASSIFIED

Total Houses - 44
Half Basement - Coal Heat

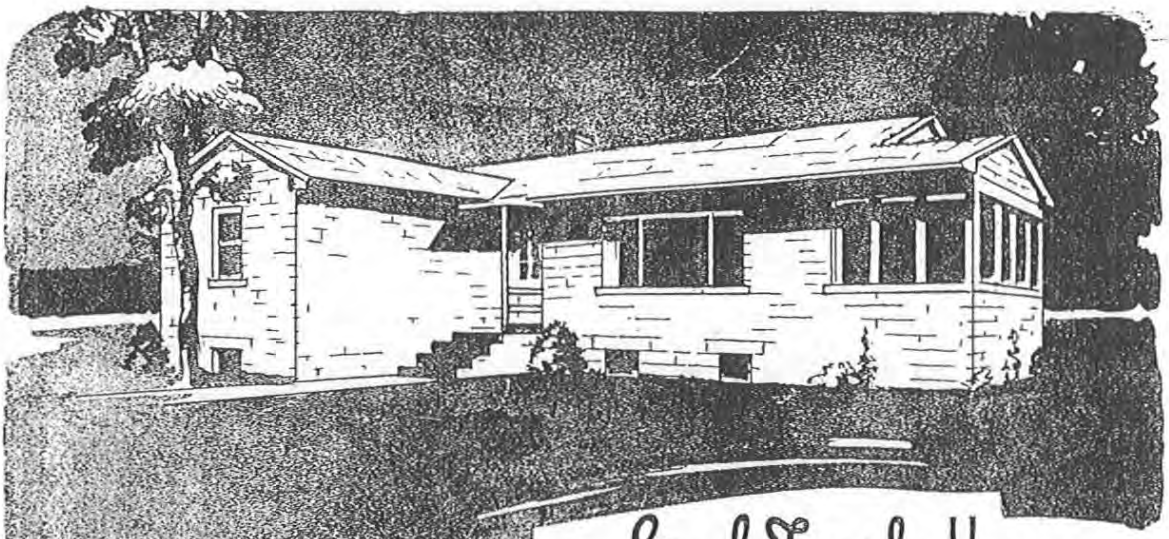


Single Family House



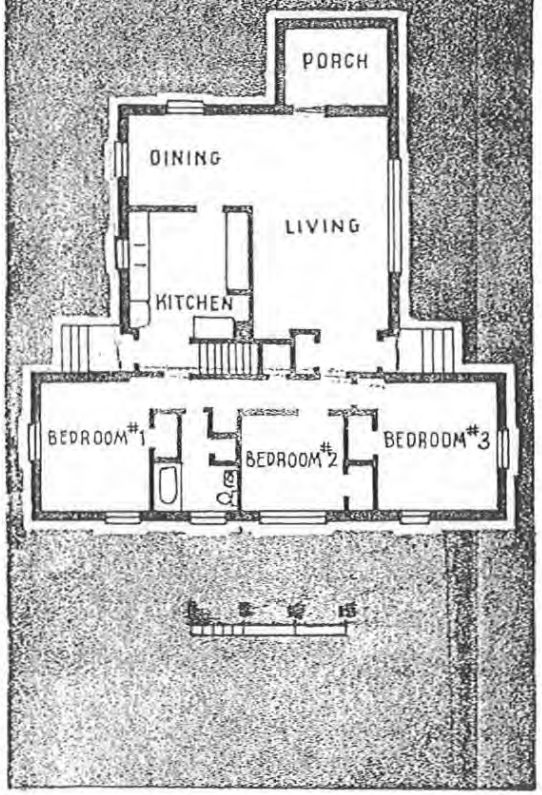
TYPE M UNIT Total Houses - 25
Full Basement Oil Heat

Type:	Single Family Unit One Story Two Bedroom	
Overall Size		40' 0" x 26' 8"
	Porch Add.	8' 8" x 11' 4"
	Bedroom Add.	8' 0" x 14' 8"
Rooms	**Dimension**	**Area**
Basement		
Furnace)		
Fuel)	38' 8" x 25' 4"	980 sq. ft.
Laundry)		
Platform & Stairs	3' 0" x 14' 0"	42 sq. ft.
First Floor		
Hall	3' 0" x 10' 0"	30 sq. ft.
Kitchen Entry Hall	3' 0" x 7' 0"	21 sq. ft.
Bathroom Entry Hall	3' 0" x 5' 0"	15 sq. ft.
Hall Clo.	2' 0" x 2' 0"	4 sq. ft.
Linen Clo.	2' 0" x 2' 0"	4 sq. ft.
Coat Clo.	3' 0" x 2' 0"	6 sq. ft.
Living Room	22' 0" x 13' 0"	286 sq. ft.
Dining Room	9' 6" x 12' 0"	114 sq. ft.
Kitchen	10' 0" x 12' 0"	120 sq. ft.
Broom Clo.	2' 0" x 2' 0"	4 sq. ft.
17 Lin. ft. Worktop		
20 Lin. ft. Cupboard		
Bedroom #1	11' 0" x 13' 0"	143 sq. ft.
Closet	2' 0" x 4' 0"	8 sq. ft.
Bedroom #2	12' 8" x 11' 8"	148 sq. ft.
Closet	3' 0" x 3' 0"	9 sq. ft.
Bathroom	8' 0" x 5' 0"	40 sq. ft.
Screened Porch	8' 0" x 10' 0"	80 sq. ft.

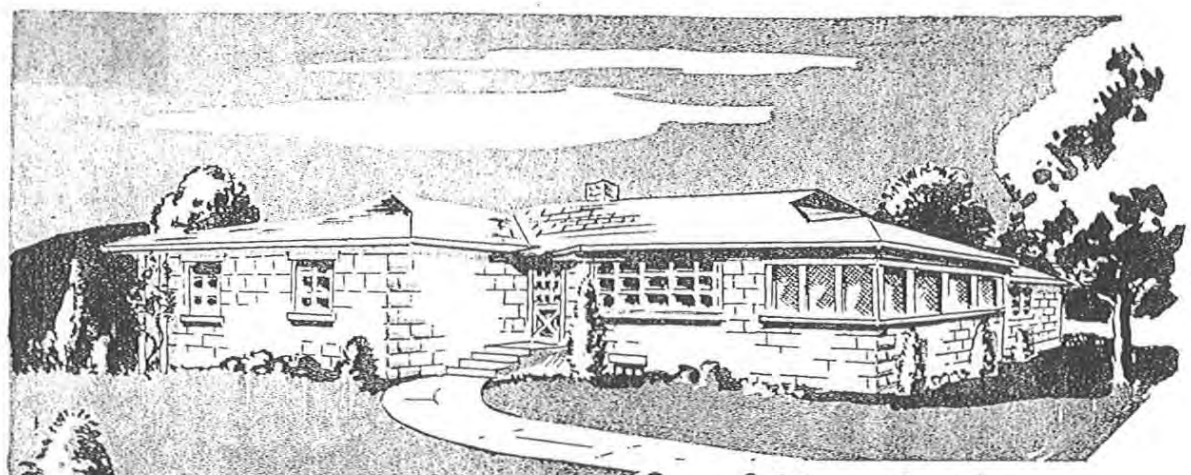


Single Family House

TYPE Q UNIT

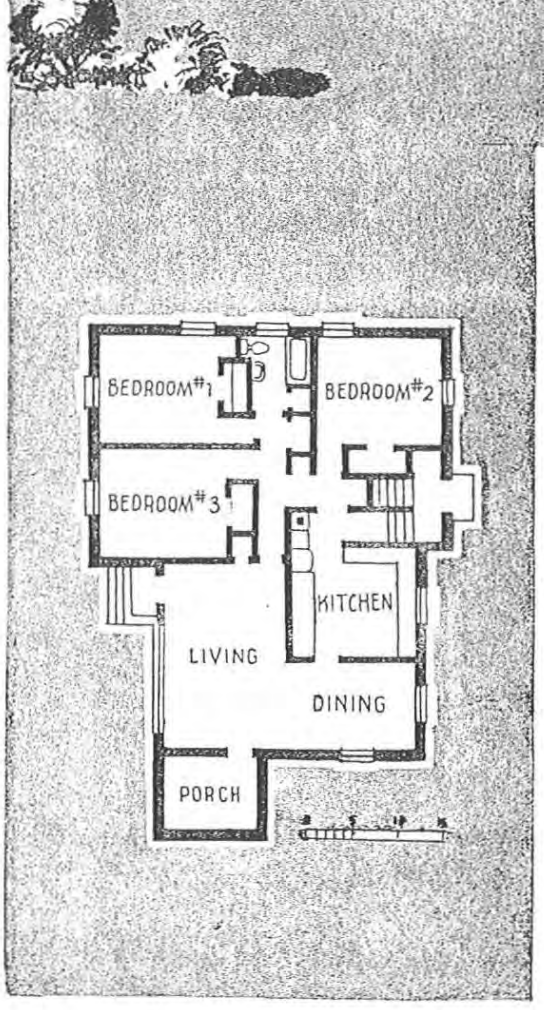


Type:	Single Family Unit One Story Three Bedroom	
Overall Size		46' 0" x 50' 0"
Rooms	Dimensions	Area
Basement		
Furnace) Fuel) Laundry)	26' 0" x 25' 4"	659 sq. ft.
Stairs	10' 0" x 3' 0"	30 sq. ft.
First Floor		
Living Room)	22' 0" x 13' 2"	310 sq. ft.
Entrance Hall)	4' 0" x 5' 0"	
Dining Room	9' 8" x 12' 0"	116 sq. ft.
Kitchen	11' 9" x 12' 4"	145 sq. ft.
Broom Clo. 17 Lin. ft. Worktop 15 Lin. ft. Cupboard	2' 0" x 3' 0"	6 sq. ft.
Screened Porch	8' 0" x 10' 0"	80 sq. ft.
Hall	3' 0" x 18' 0"	54 sq. ft.
Closet	3' 0" x 3' 0"	9 sq. ft.
Linen Clo.	2' 0" x 3' 0"	6 sq. ft.
Bedroom #1	13' 4" x 11' 2"	149 sq. ft.
Closet	4' 6" x 2' 6"	11 sq. ft.
Bedroom #2	10' 0" x 10' 0"	100 sq. ft.
Closet	4' 6" x 2' 6"	11 sq. ft.
Bedroom #3	13' 4" x 11' 4"	151 sq. ft.
Closet	4' 6" x 2' 6"	11 sq. ft.
Bathroom	5' 2" x 8' 2"	42 sq. ft.
Closet	2' 0" x 3' 0"	6 sq. ft.



Single Family House

TYPE R UNIT



Type:	Single Family Unit One Story Three Bedroom	
Overall Size		45' 4" x 37' 4"
	Porch Add.	8' 8" x 11' 4"
Rooms	Dimension	Area
Basement		
Furnace) Fuel) Laundry)	26' 0" x 28' 0"	728 sq. ft.
Platform & Stairs	3' 0" x 12' 0"	36 sq. ft.
First Floor		
Hall	3' 0" x 21' 0"	63 sq. ft.
Stair Clo.	2' 0" x 3' 0"	6 sq. ft.
Hall Clo. #1	2' 0" x 3' 0"	6 sq. ft.
Linen Clo.	2' 0" x 4' 0"	8 sq. ft.
Coat Clo.	2' 0" x 2' 0"	4 sq. ft.
Living Room	19' 6" x 13' 0"	254 sq. ft.
Dining Room	9' 6" x 13' 6"	129 sq. ft.
Kitchen	11' 6" x 13' 0"	150 sq. ft.
Broom Clo. 18' Lin. Ft. Worktop 26' Lin. Ft. Cupboard	2' 0" x 2' 0"	4 sq. ft.
Hall Clo. #2	2' 0" x 2' 0"	4 sq. ft.
Kitchen Entry Hall	3' 0" x 8' 0"	24 sq. ft.
Bedroom #1	11' 6" x 12' 6"	144 sq. ft.
Closet	5' 0" x 2' 6"	12 sq. ft.
Bedroom #2	11' 9" x 13' 3"	156 sq. ft.
Closet	5' 0" x 2' 6"	13 sq. ft.
Bedroom #3	11' 9" x 13' 5"	158 sq. ft.
Closet	6' 0" x 2' 6"	15 sq. ft.
Bath Room	8' 0" x 6' 0"	48 sq. ft.
Screened Porch	10' 0" x 8' 0"	80 sq. ft.

Total Houses - 146
Full Basement - Oil Heat

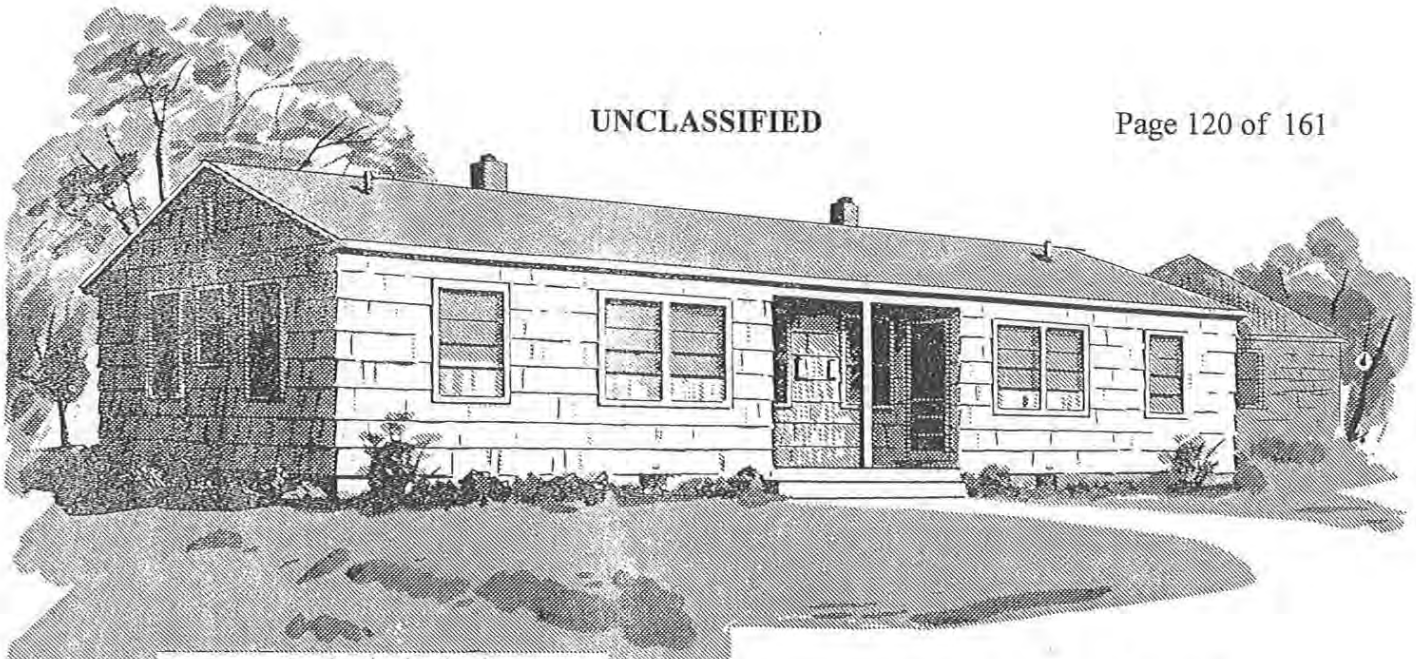
Single Family House

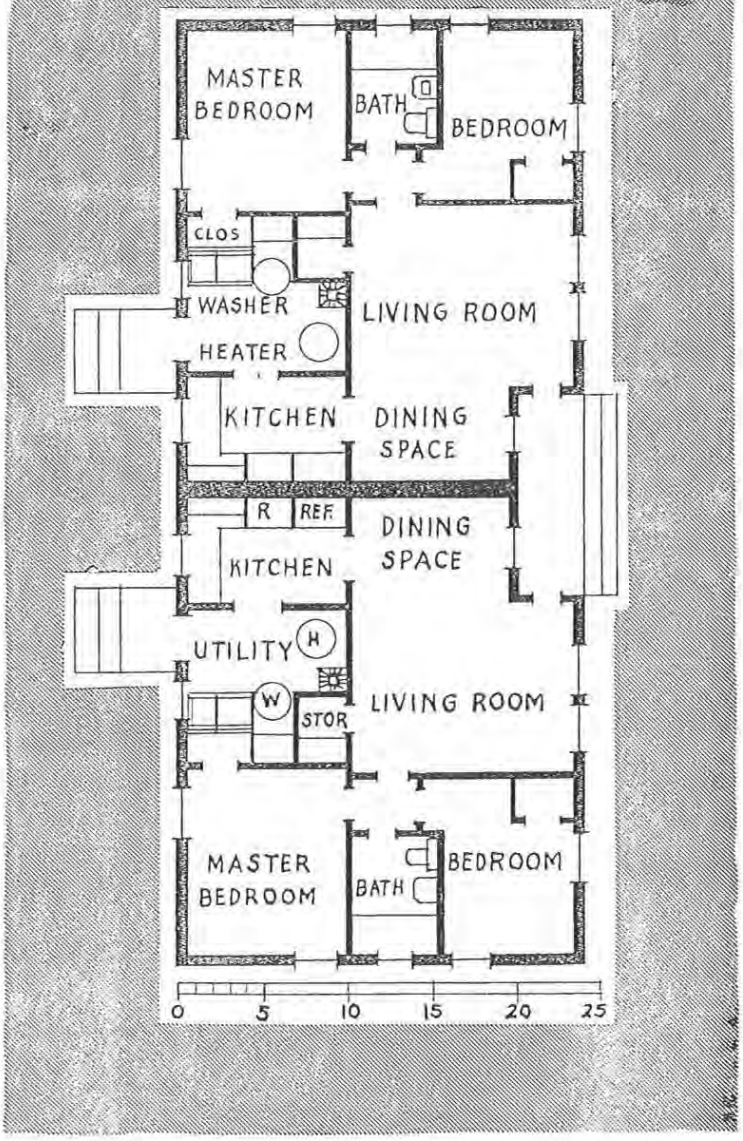
TYPE S UNIT

Type:	Single Family Unit Two Story Four Bedroom	
Overall Size		46' 8" x 33' 4"
Rooms	**Dimension**	**Area**
Basement		
Furnace)		
Fuel)	26' 8" x 23' 9"	
Laundry)	8' 0" x 13' 4"	740 sq. ft.
Stairs & Platform	3' 0" x 13' 0"	39 sq. ft.
First Floor		
Living Room	20' 4" x 13' 0"	263 sq. ft.
Entrance Hall	3' 0" x 4' 0"	12 sq. ft.
Coat Clo.	3' 0" x 2' 6"	7 sq. ft.
Dining Room	13' 0" x 14' 6"	189 sq. ft.
Kitchen	9' 9" x 13' 0"	127 sq. ft.
Broom Clo. 16 Lin. ft. Worktop 20 Lin. ft. Cupboard	2' 0" x 2' 0"	4 sq. ft.
Porch	7' 4" x 12' 8"	93 sq. ft.
Rear Hall	3' 0" x 12' 0"	36 sq. ft.
Connecting Hall	3' 0" x 6' 0"	18 sq. ft.
Hall Clo.	2' 0" x 2' 0"	4 sq. ft.
Bedroom #1	13' 2" x 11' 3"	148 sq. ft.
Closet	2' 6" x 4' 0"	10 sq. ft.
Bedroom #2	13' 2" x 11'10"	156 sq. ft.
Closet	6' 0" x 3' 0"	18 sq. ft.
Stairs & Platform	3' 0" x 20' 0"	60 sq. ft.
Bath	5' 2" x 8' 0"	42 sq. ft.
Linen Clo.	2' 0" x 2' 0"	4 sq. ft.
Second Floor		
Bedroom #3	15' 4" x 12' 0" (+ 4' x 4')	200 sq. ft.
Closet	4' 0" x 2' 6"	10 sq. ft.
Bedroom #4	13' 2" x 12' 2"	160 sq. ft.
Closet	6' 0" x 3' 0"	18 sq. ft.
Bathroom	8' 0" x 5' 0"	40 sq. ft.
Store Room	13' 0" x 7' 4" - 7' 3" x 4' 7"	129 sq. ft.
Linen Clo.	2' 0" x 3' 0"	6 sq. ft.

Total Houses - 19
Full Basement - Oil Heat

RICHLAND, WASH.





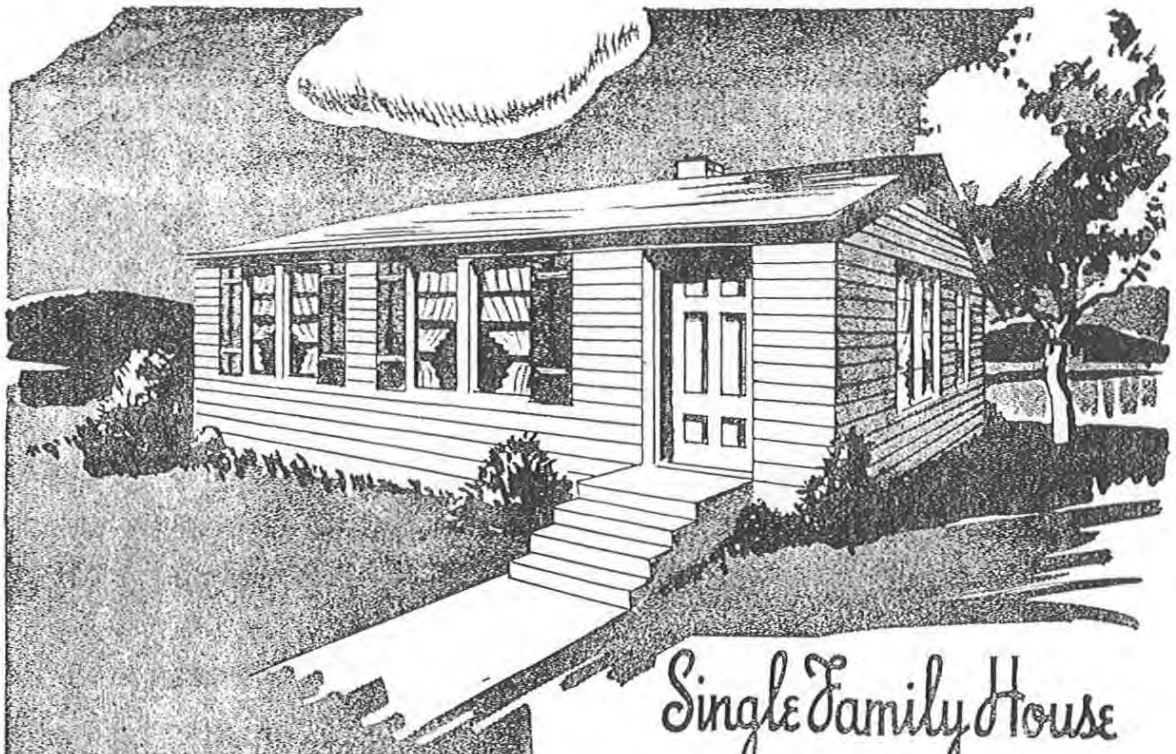
Two Family House

TYPE T UNIT

Type:	Two Family House One Story Two Bedroom Units		
Overall Size	24' 0" x 56' 4"		
Rooms	Size	Area	
Basement	None	None	
Living Room	10' 5" x 13' 4"	140	sq. ft.
Closet	2' 6" x 4' 0"	10	sq. ft.
Dining Room	6' 6" x 9' 1"	59	sq. ft.
Kitchen 8 1/4 Lin. Ft. Worktop 3 3/4 Lin. Ft. Cupboard	6' 6" x 9' 3"	60	sq. ft.
Utility Room	7' 0" x 9' 3"	65	sq. ft.
Bath	5' 0" x 7' 0"	35	sq. ft.
Hall	3' 0" x 4' 0"	12	sq. ft.
Bedroom #1	9' 3" x 11' 0"	102	sq. ft.
Closet	2' 0" x 3' 9"	7 1/2	sq. ft.
Bedroom #2	8' 0" x 8' 0"	64	sq. ft.
Closet	2' 0" x 3' 6"	7	sq. ft.

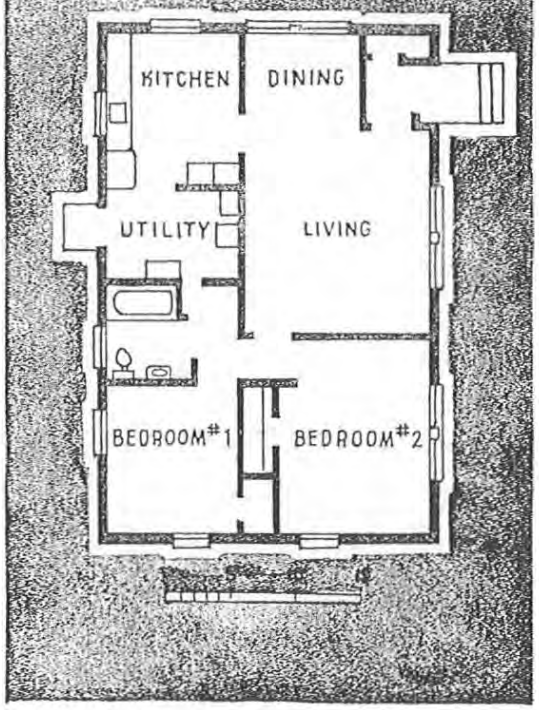
*Second half of duplex is opposite hand of first half.

Total Houses - 10
No Basement - Oil Heat

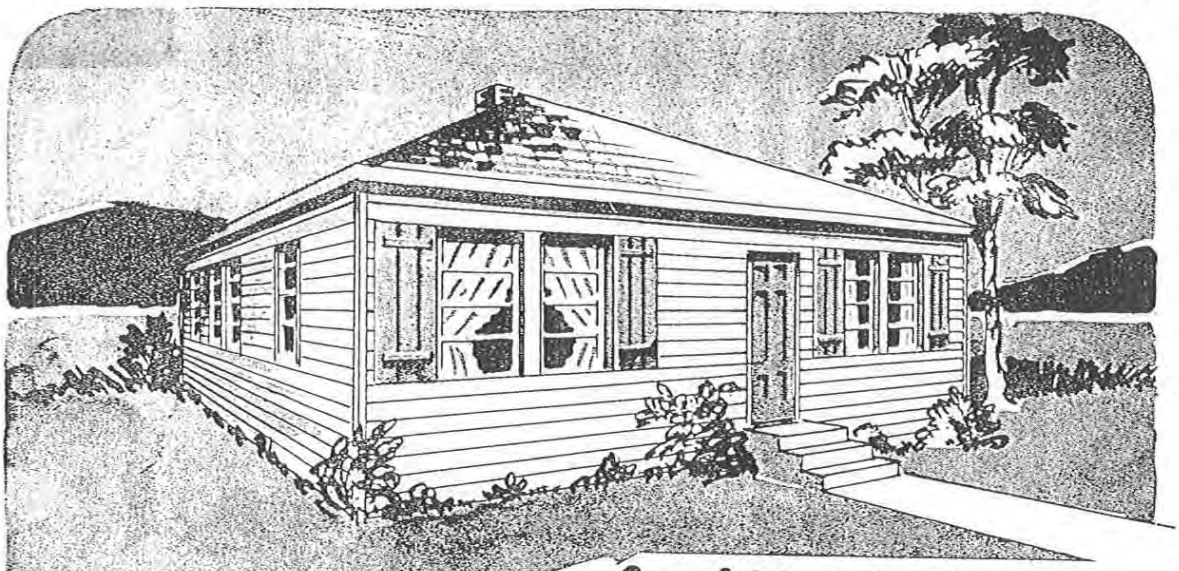


Single Family House

TYPE U UNIT

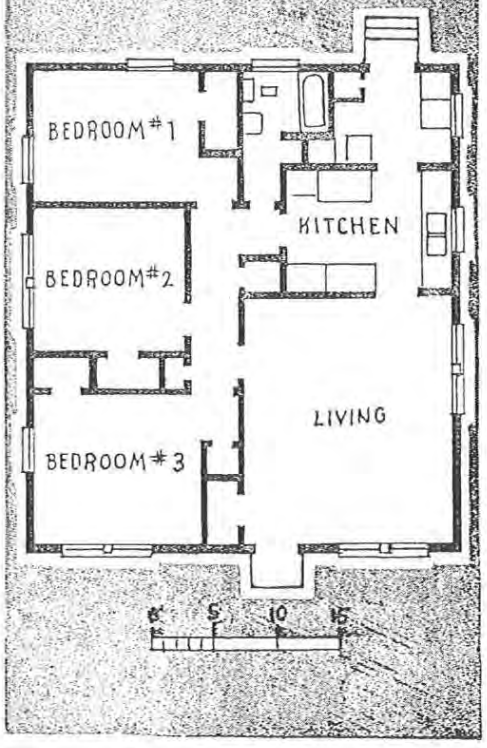


Type:	Single Family Unit One Story Two Bedroom	
Overall Size		36' 0" x 24' 0"
Rooms	Dimension	Area
Basement		None
First Floor		
Living Room)	13' 3" x 13' 0"	172 sq. ft.
Dining Area)	7' 3" x 8' 7"	62 sq. ft.
Coat Clo.	2' 0" x 4' 0"	8 sq. ft.
Entrance Hall	4' 0" x 3' 6"	14 sq. ft.
Kitchen 8 Lin, Ft. Worktop 4 Lin. Ft. Cupboard	10' 6" x 9' 6"	100 sq. ft.
Utility Room	9' 6" x 6' 0"	57 sq. ft.
Broom Clo.	2' 0" x 1' 6"	3 sq. ft.
Bedroom #1	10' 6" x 9' 6"	100 sq. ft.
Closet	4' 0" x 2' 0"	8 sq. ft.
Bedroom #2	13' 6" x 10' 6"	142 sq. ft.
Closet	6' 0" x 2' 0"	12 sq. ft.
Hall	7' 0" x 3' 0"	21 sq. ft.
Linen Clo.	2' 6" x 2' 0"	5 sq. ft.
Bathroom	6' 4" x 5' 9"	37 sq. ft.



Single Family House

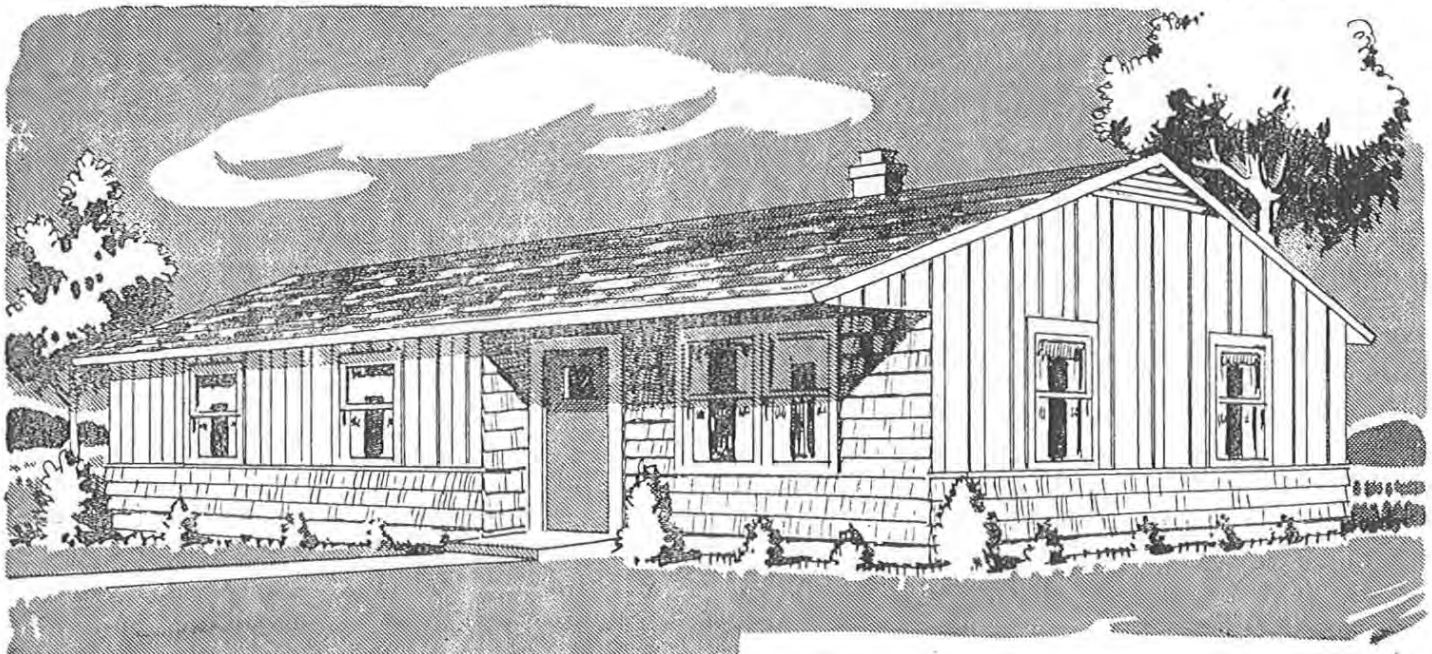
TYPE V UNIT



Type:	Single Family Unit One Story Three Bedroom	
Overall Size		36' 0" x 32' 0"
Rooms Basement	Dimensions	Area No Basement
First Floor		
Living Room) Dining Area)	15' 0" x 18' 0"	270 sq. ft.
Coat Clo.	2' 6" x 4' 6"	11 sq. ft.
Kitchen 11½ Lin. ft. Worktop 11½ Lin. ft. Cupboard	11' 9" x 8' 9"	103 sq. ft.
Utility Room	8' 3" x 7' 3"	60 sq. ft.
Broom Clo.	2' 0" x 2' 0"	4 sq. ft.
Hall	3' 6" x 18' 0"	63 sq. ft.
Store Clo.	3' 0" x 2' 0"	6 sq. ft.
Bedroom #1	12' 6" x 10' 0"	125 sq. ft.
Closet	2' 0" x 6' 0"	12 sq. ft.
Bedroom #2	11' 6" x 10' 6"	121 sq. ft.
Closet	4' 6" x 2' 6"	11 sq. ft.
Bedroom #3	13' 0" x 10' 0"	130 sq. ft.
Closet	4' 6" x 2' 6"	11 sq. ft.
Closet	2' 6" x 3' 0"	7 sq. ft.
Linen Clo.	2' 0" x 2' 0"	4 sq. ft.
Bathroom	6' 6" x 5' 0"	33 sq. ft.

Low	38.19
Medium	41.76
High	44.54

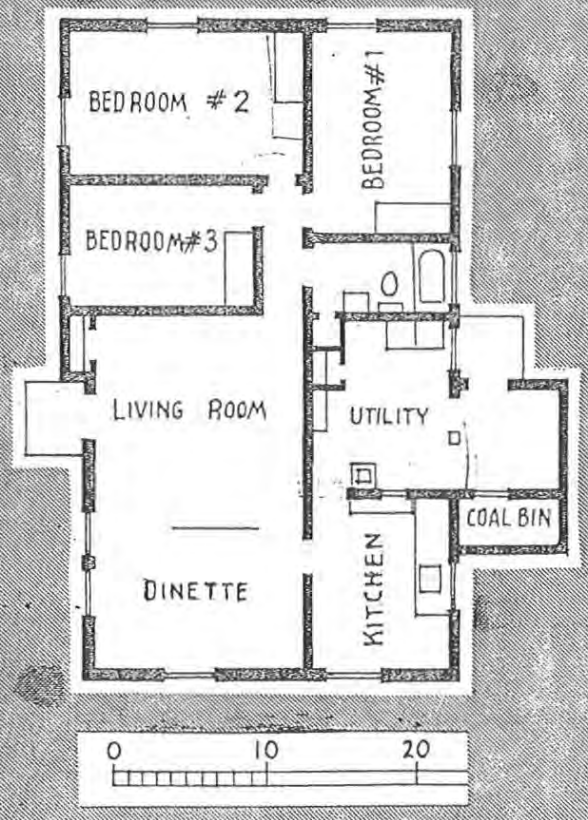
Total Houses - 340
No Basement - Oil Heat



Single Family House

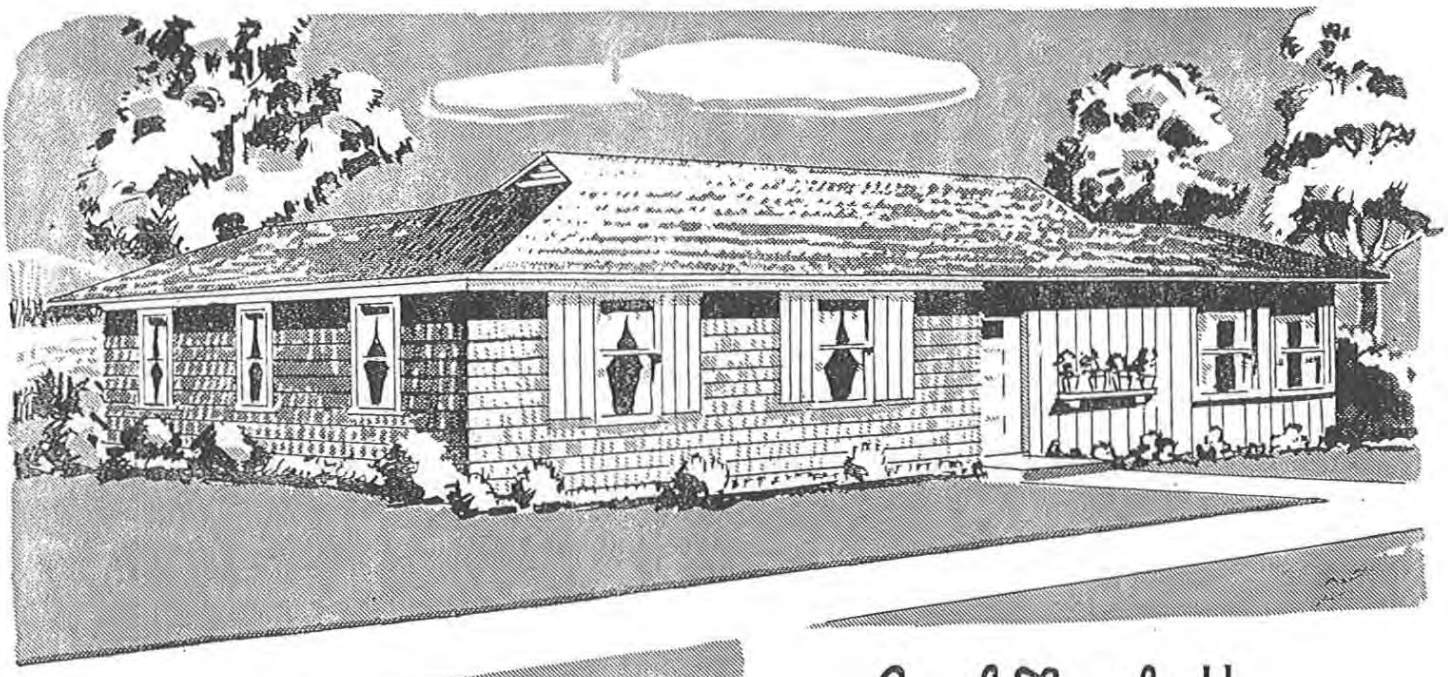
1170 sq ft.

TYPE Y UNIT



Type:	Single Family Unit One Story Three Bedroom	
Overall Size		27' 0" x 43' 6"
Rooms	Size	Area
Basement	None	None
Living Room	14' 0" x 14' 6"	203 sq. vt.
Closet	1' 6" x 4' 0"	6 sq. ft.
Dining Room	9' 0" x 14' 0"	126 sq. ft.
Kitchen 11 1/2 Lin. Ft. Worktop 6 1/2 Lin. Ft. Cupboard	9' 6" x 11' 9"	111 sq. ft.
Utility Room	9' 0" x 9' 6"	85 sq. ft.
Bath	5' 0" x 9' 6"	47 sq. ft.
Hall	3' 0" x 8' 6"	25 sq. ft.
Closet	2' 0" x 2' 0"	4 sq. ft.
Bedroom #3	8' 0" x 10' 4"	83 sq. ft.
Closet	2' 0" x 4' 6"	9 sq. ft.
Bedroom #2	10' 0" x 14' 0"	140 sq. ft.
Closet	2' 0" x 5' 0"	10 sq. ft.
Bedroom #1	9' 6" x 11' 6"	110 sq. ft.
Closet	2' 0" x 5' 0"	10 sq. ft.

203 sq. ft.

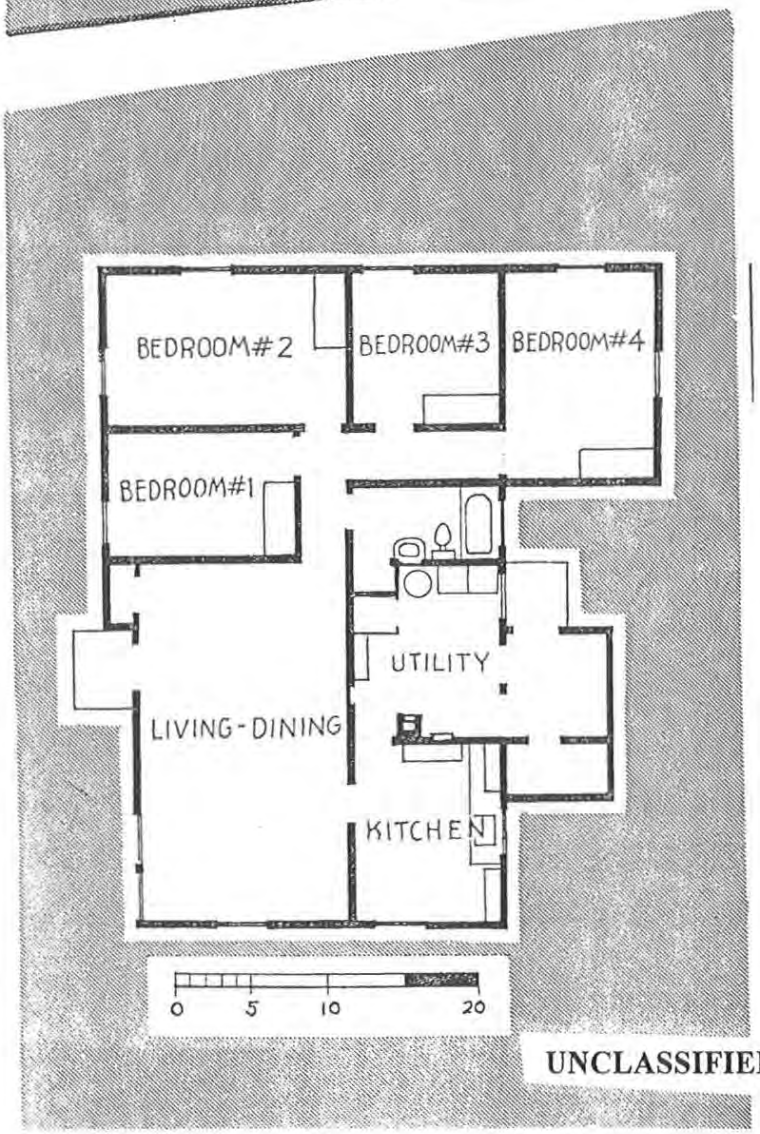


Single Family House

TYPE 7 UNIT Total Houses - 50

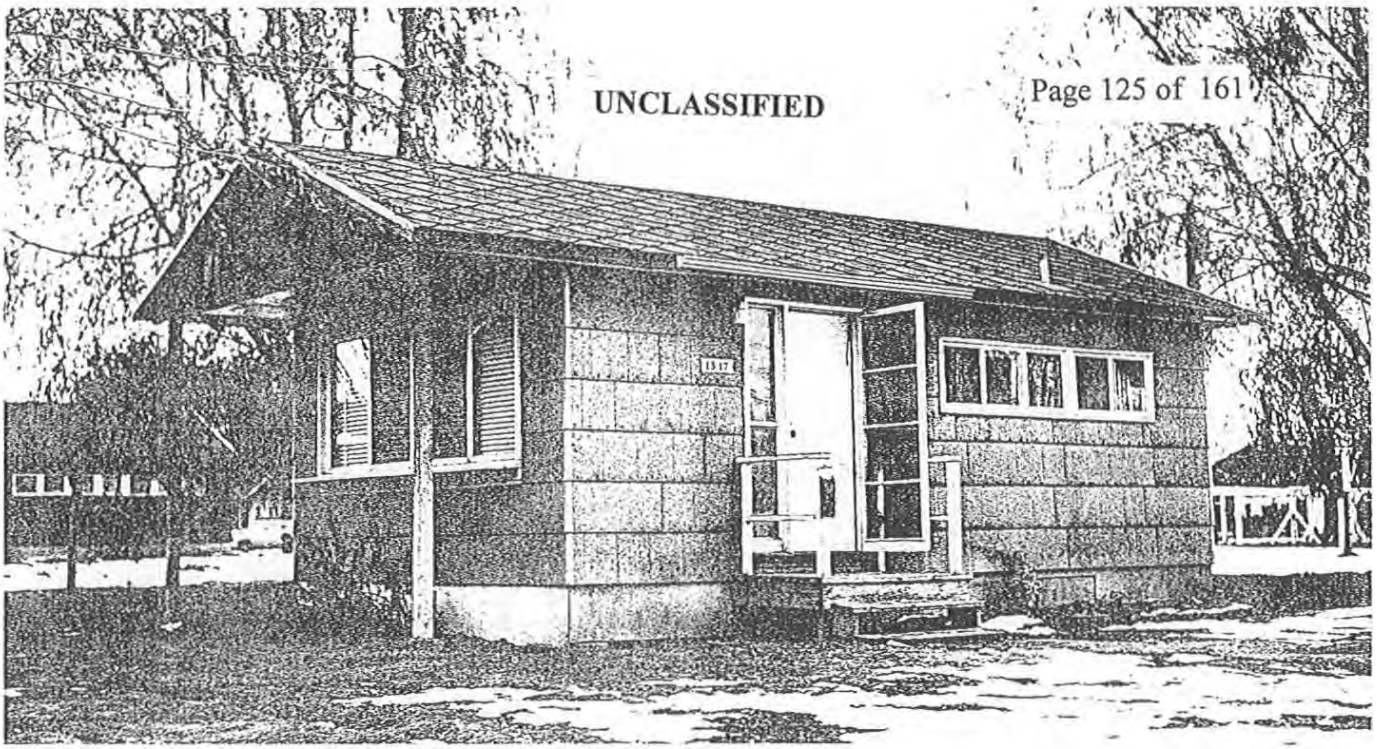
No Basement Coal Heat

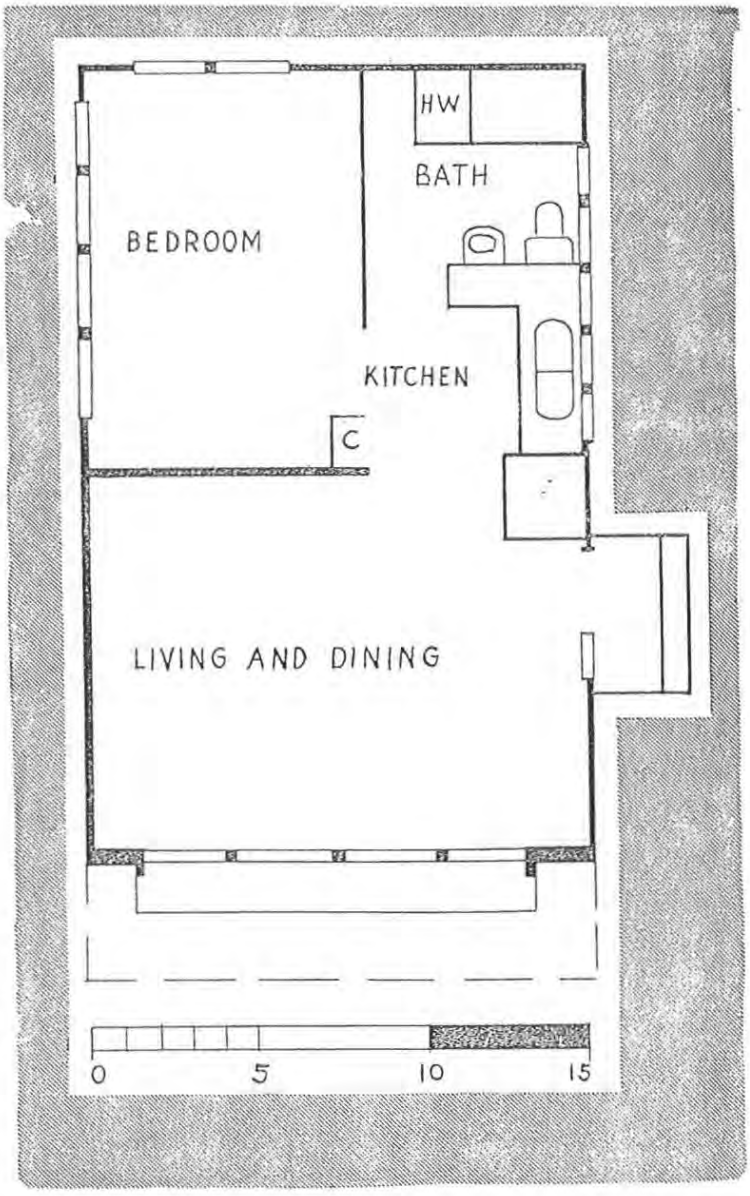
Type:	Single Family Unit One Story Four Bedroom	
Overall Size		37' 6" x 43' 6"
Rooms	Size	Area
Basement	None	None
Living Room	14' 0" x 14' 6"	203 sq. ft.
Closet	1' 6" x 4' 0"	6 sq. ft.
Dining Room	9' 0" x 14' 0"	126 sq. ft.
Kitchen	9' 6" x 11' 9"	111 sq. ft.
11½ Lin. Ft. Worktop 6½ Lin. Ft. Cupboard Utility Room	9' 0" x 9' 6"	85 sq. ft.
Bath	5' 0" x 9' 6"	47 sq. ft.
Hall	3' 0" x 18' 6"	55½ Sq. fg.
Closet	2' 0" x 2' 0"	4 sq. ft.
Bedroom #1	8' 0" x 10' 4"	83 sq. ft.
Closet	2' 0" x 4' 6"	9 sq. ft.
Bedroom #2	10' 0" x 14' 0"	140 sq. ft.
Closet	2' 0" x 5' 0"	10 sq. ft.
Bedroom #3	8' 0" x 9' 6"	76 sq. ft.
Closet	2' 0" x 5' 0"	10 sq. ft.
Bedroom #4	10' 0" x 11' 6"	115 sq. ft.
Closet	2' 0" x 5' 0"	10 sq. ft.



UNCLASSIFIED

55½ sq. ft.





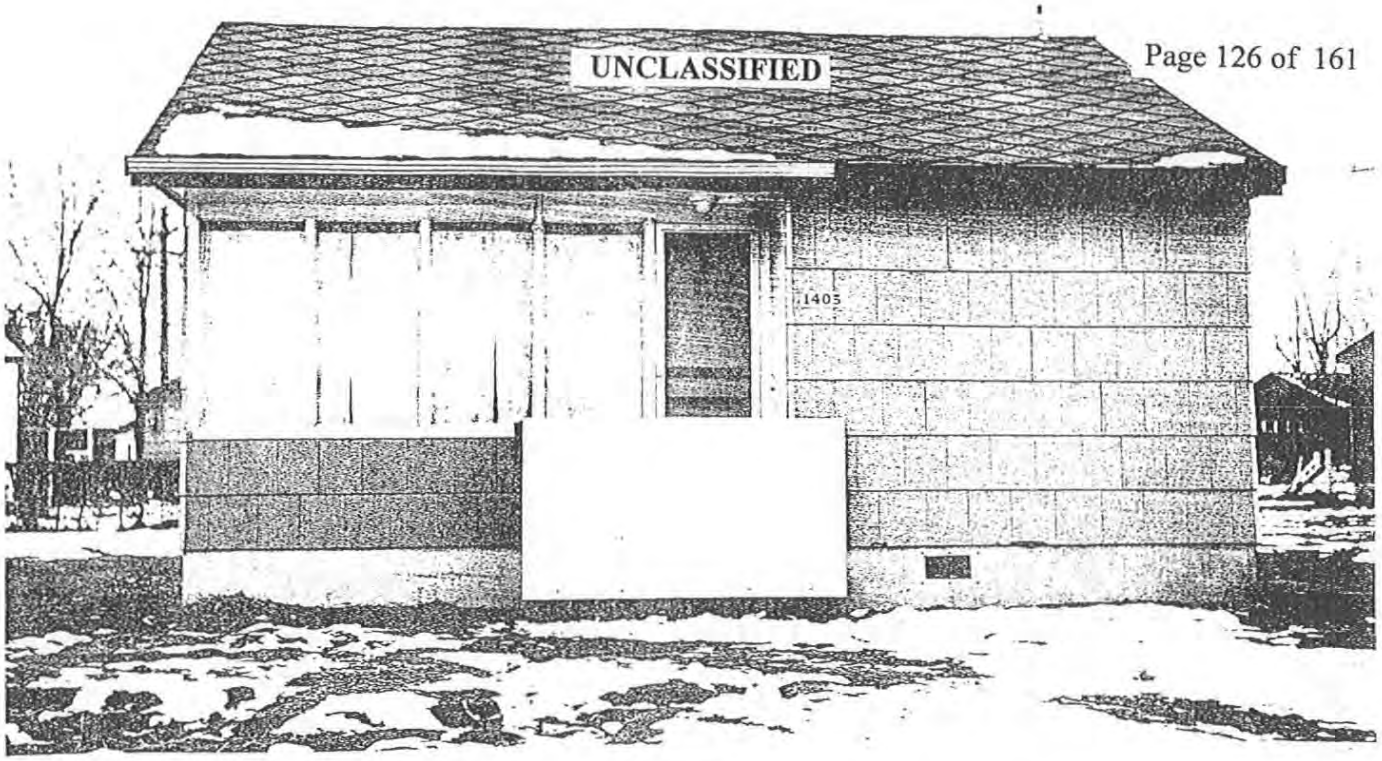
Single Family House

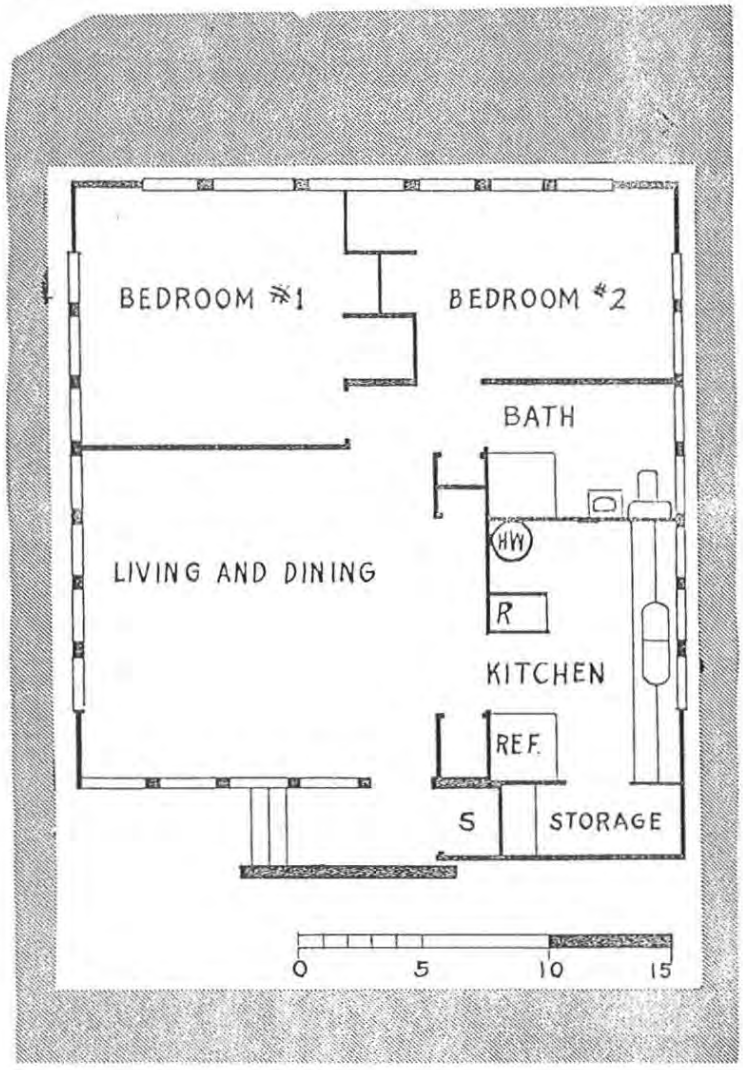
Type:	Single Family Unit One Story One Bedroom	
Overall Size		15' 6" x 24' 0"
Room	Size	Area
Basement	None	None
Living Room	9' 2" x 9' 9"	89 1/2 sq. ft.
Closet	1' 6" x 1' 10"	2 3/4 sq. ft.
Dining Room	6' 0" x 9' 0"	54 sq. ft.
Kitchen	6' 0" x 8' 0"	48 sq. ft.
5 1/4 Lin. Ft. Worktop 7 Lin. Ft. Cupboard Broom & Storage Clo.	0' 9" x 2' 0"	1 1/2 sq. ft.
Bedroom	8' 5" x 10' 2"	85 1/2 sq. ft.
Closet	1' 10" x 6' 2"	11 1/4 sq. ft.
Bath		30 sq. ft.
Closet	1' 1" x 2' 3"	2 1/2 sq. ft.
Water Tank Closet	1' 10" x 2' 3"	4 sq. ft.

Total Houses - 117

No Basement - Electric Heat

ADDIE RICHLAND, WASH.





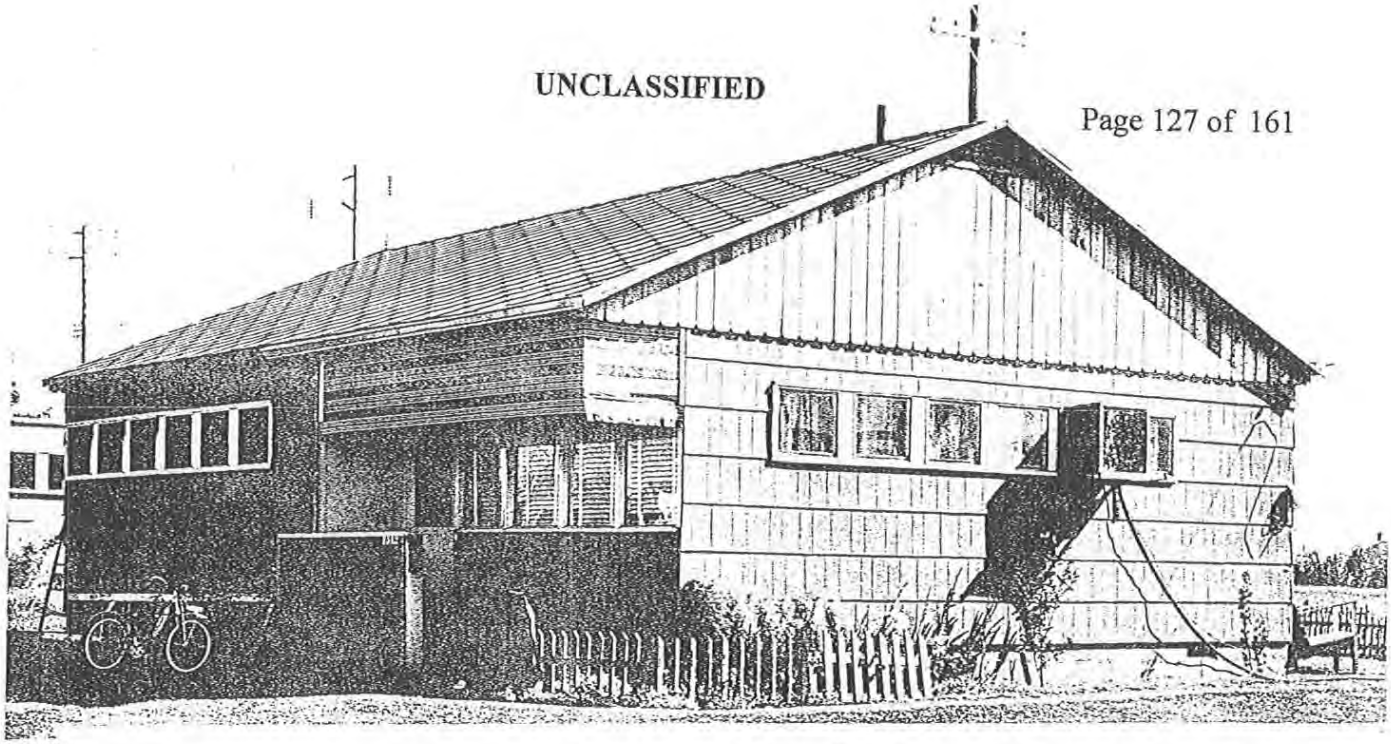
Single Family House

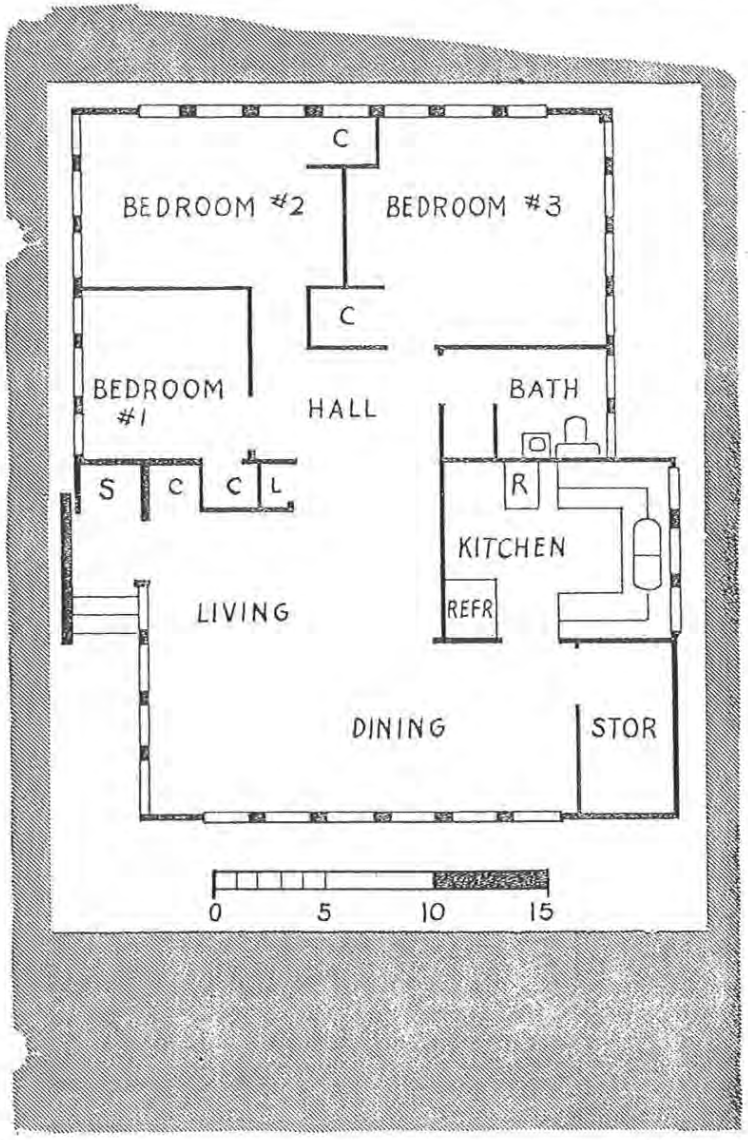
Type:	Single Family Unit One Story Two Bedroom	
Overall Size		24' 6" x 27' 0"
Rooms	Size	Area
Basement	None	None
Living Room	13' 0" x 10' 6"	136½ sq. ft.
Closet	2' 0" x 2' 6"	5 sq. ft.
Dining Room	5' 6" x 9' 0"	49½ sq. ft.
Kitchen 10½ Lin. Ft. Worktop 10½ Lin. Ft. Cupboard Broom & Storage Clo.	7' 6" x 10' 6" 2' 9" x 7' 10"	79 sq. ft. 21½ sq. ft.
Bedroom #1	10' 5" x 10' 5"	108 sq. ft.
Closet	2' 0" x 2' 6"	5 sq. ft.
Bedroom #2	7' 9" x 10' 6"	81 sq. ft.
Closet	2' 6" x 2' 6"	6 sq. ft.
Bath	5' 0" x 7' 6"	37½ sq. ft.
Hall	2' 6" x 5' 3"	13 sq. ft.
Closet (Front Porch)	2' 3" x 2' 9"	6 sq. ft.

Total Houses - 660

No Basement - Electric Heat

AEC-GE-RICHLAND, WASH



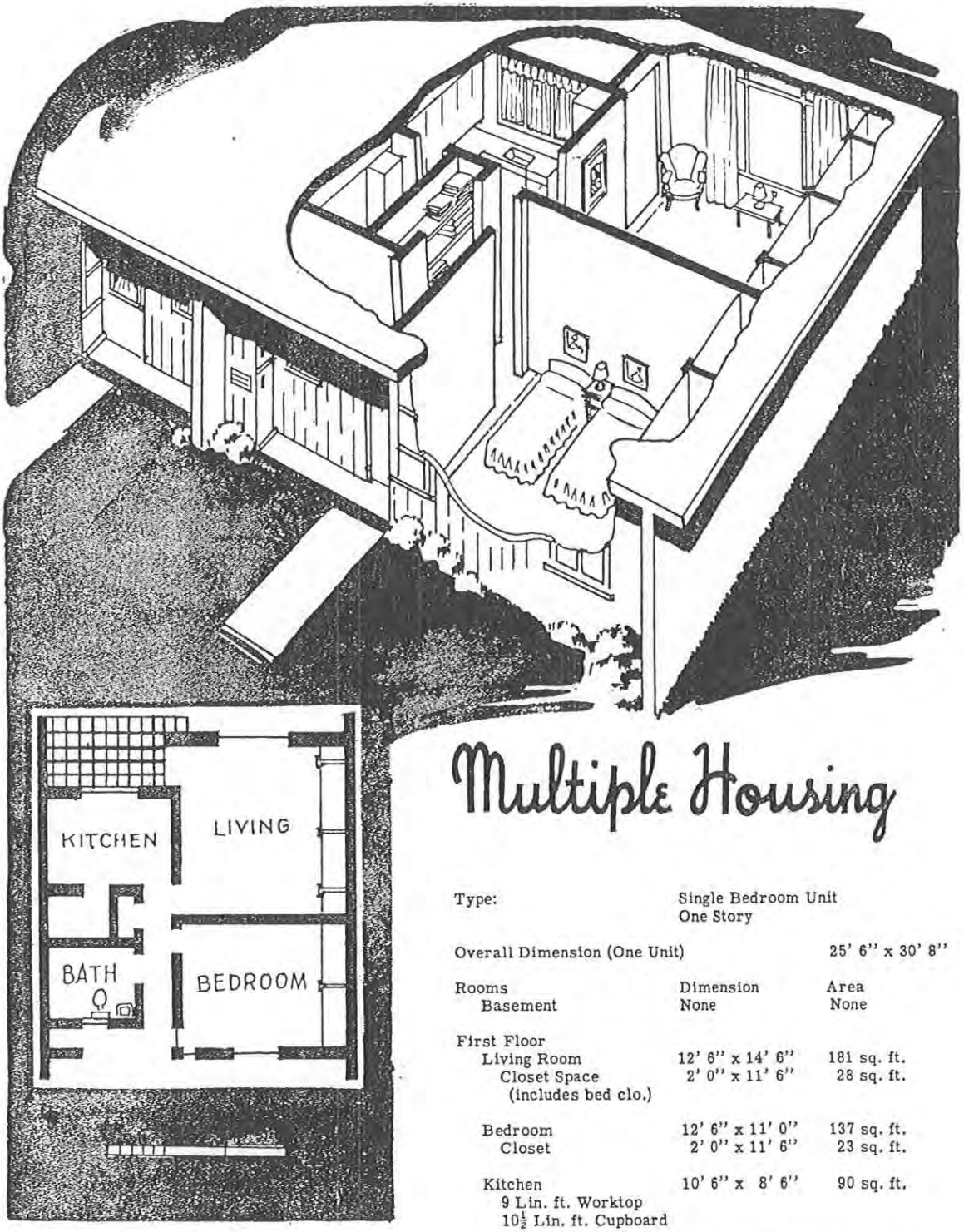


Single Family House

Type:	Single Family Unit One Story Three Bedroom	
Overall Size		27' 0" x 32' 3"
Rooms	Size	Area
Basement	None	None
Living Room	12' 8" x 13' 8"	173 sq. ft.
Closet	2' 0" x 3' 0"	6 sq. ft.
Dining Room	5' 9" x 7' 9"	45 sq. ft.
Kitchen 9 Lin. Ft. Worktop 9 Lin. Ft. Cupboard Broom & Storage Clo.	7' 8" x 10' 5" 4' 7" x 7' 9"	80 sq. ft. 35½ sq. ft.
Bedroom #1	7' 7" x 7' 7"	57 sq. ft.
Closet	2' 0" x 2' 6"	5 sq. ft.
Bedroom #2	7' 9" x 10' 5"	74 sq. ft.
Closet	2' 6" x 2' 6"	6 sq. ft.
Bedroom #3	10' 5" x 10' 5"	110 sq. ft.
Closet	2' 6" x 2' 6"	6 sq. ft.
Hall	7' 1" x 8' 3"	58 sq. ft.

Total Houses - 513

No Basement - Electric Heat



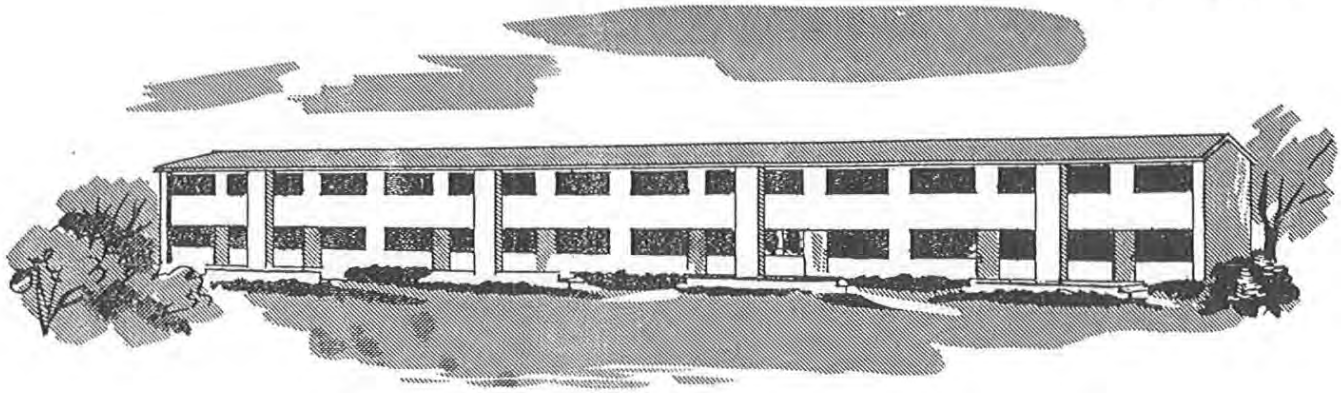
Multiple Housing

Type:	Single Bedroom Unit One Story	
Overall Dimension (One Unit)		25' 6" x 30' 8"
Rooms	Dimension	Area
Basement	None	None
First Floor		
Living Room	12' 6" x 14' 6"	181 sq. ft.
Closet Space (includes bed clo.)	2' 0" x 11' 6"	28 sq. ft.
Bedroom	12' 6" x 11' 0"	137 sq. ft.
Closet	2' 0" x 11' 6"	23 sq. ft.
Kitchen 9 Lin. ft. Worktop 10½ Lin. ft. Cupboard	10' 6" x 8' 6"	90 sq. ft.
Store Room	5' 0" x 4' 0"	20 sq. ft.
Linen Clo.	4' 0" x 1' 8"	7 sq. ft.
Hall	10' 0" x 3' 0"	30 sq. ft.
Bathroom	7' 0" x 5' 0"	35 sq. ft.

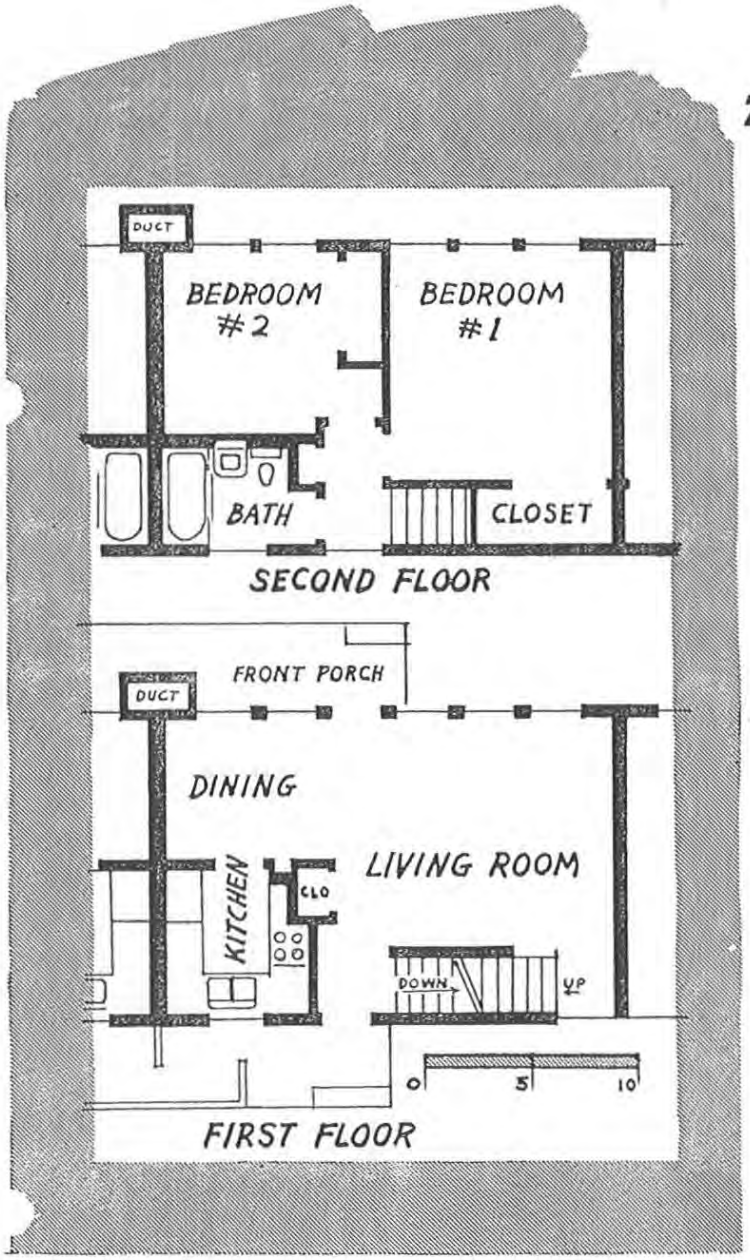
50.50

Total Houses - 64

No Basement - Steam Heat



Apartment Unit



Type:		Eight Family Unit Two Stories Two Bedrooms
Overall Size	(One Unit)	16 X 24
Rooms:	Size	Area
Basement	23' 0'' X 15' 0''	291 sq. ft.
Stair		44sq. ft.
First Floor		
Living Room	12' 1'' X 15' 10''	191 sq. ft.
Closet	2' 9'' X 2' 0''	5½ sq. ft.
Dining Room	6' 9'' X 7' 3''	49 sq. ft.
Storage Cabinet	7' 3'' X 1' 6''	11 sq. ft.
Kitchen	5' 6'' X 3' 8''	32 sq. ft.
5½ lin. ft. Worktop		
12 lin. ft. Cupboard		
Broom Closet	1' 0'' X 2' 0''	
Second Floor		
Bedroom #1	11' 6'' X 12' 0''	138 sq. ft.
Closet	5' 3'' X 2' 0''	10½ sq. ft.
Bedroom #2	9' 6'' X 9' 3''	88 sq. ft.
Closet	5'9'' X 2' 0''	11½ sq. ft.
Bath	4' 0'' X 5' 0''	20 sq. ft.
Stair	4' 0'' X 6' 6''	26 sq. ft.

AEC-GE-RICHLAND, WASH.

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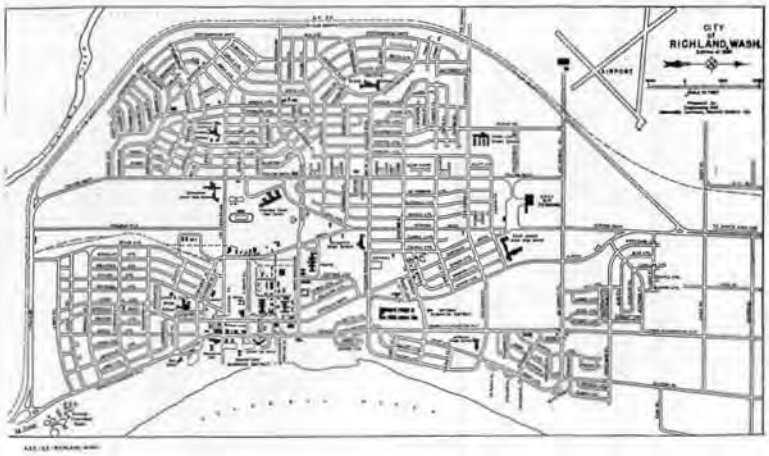

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FOOD SUPPLIES USED

Item	Used to December 1, 1944	Used during May 1944
Coffee	773,337 pounds	66,211 pounds
Bread	2,788,549 pounds	137,904 pounds
Milk (½ pints)	8,472,277 bottles	750,380 bottles
Milk (quarts)	55,219 quarts	6,739 quarts
Smoked Ham	946,835 pounds	97,576 pounds
Ice Cream	74,907 gallons	225 gallons
Butter	214,912 pounds	12,670 pounds
Cheese	475,070 pounds	52,830 pounds
Beef Carcass	2,627,861 pounds	267,657 pounds
Chicken	1,438,061 pounds	85,528 pounds
Fish	560,120 pounds	41,936 pounds
Pork	3,259,531 pounds	94,802 pounds
Fresh Eggs	9,957,600 eggs	896,400 eggs
Potatoes	6,900,300 pounds	666,900 pounds
Turkey	857,591 pounds	94,456 pounds
Flour	2,166,881 pounds	152,300 pounds
Lamb Carcass	248,477 pounds	5,437 pounds

MEALS SERVED

	Mess Hall Meals	Box Lunches
Through June 3, 1943	120,000	876
June	134,688	14,515
July	282,900	15,788
August	539,343	25,466
September	824,064	53,718
October	1,062,568	67,375
November	1,096,391	91,625
December	1,448,844	136,824
Subtotal	**5,508,798**	**406,187**
January 1944	1,547,320	173,406
February	1,493,427	193,587
March	1,602,255	245,110
April	1,526,606	241,722
May	1,604,501	291,298
June	1,529,107	305,575
July	1,485,652	287,457
August	1,375,153	288,304
September	1,099,797	243,883
October	949,089	203,097
November	709,692	128,337
December	518,784	80,517
Subtotal	**15,441,353**	**2,682,293**
Total	**20,950,181**	**3,088,480**

TYPICAL MESS HALL MENU[1]

Mess Hall Menu: January 22 – January 28, 1945

Day	BREAKFAST	DINNER	SUPPER
	Canned Plums	Spaghetti with	Boiled Fresh Ham
M	Dry Cereal	Chicken	Gravy
O	Cracked Wheat	Brown Gravy	Mashed Potatoes
N	Fresh Milk	Brown Potatoes	Browned Sweet Potato
D	Link Sausage	Red Beans	Cold Stewed Tomato
A	French Toast	Buttered Broccoli	(sauce dishes)
Y	Syrup	Head Lettuce	Celery and Radishes
	Fried Potatoes	Russian Dressing	Frozen Apricot Pie
	Whole Wheat	Canned Cherries	Bread
	Sesame Rolls	English Rocks	Butter Substitute
	Bread	Bread – Coffee	Coffee
	Butter Substitute	Butter Substitute	
	Coffee	Peanut Butter	
		Jelly or Jam	
	Grapefruit	Baked Fish	Chicken Fricassee
	Dry Cereal	Tartar Sauce	Head Lettuce
T	Rolled Oats	Gravy	Mashed Potatoes
U	Fresh Milk	Parsley Potato	Rutabaga
E	Eggs Scrambled	Fried Parsnips	Buttered Peas
S	with Ground Ham	Hot Pickled	Beets
D	Toast	Mixed Green Salad	Russian Dressing
A	Jam	French Dressing	Apple Pie
Y	Fried Potatoes	Frosted Gingerbread	Bread
	Butterfly Roll	Bread Coffee	Butter
	Bread Substitute	Butter Substitute	Jelly
	Coffee	Jelly or Jam	Coffee
	Orange	Roast Pork	Baked Liver
	Dry Cereal	Dressing & Gravy	Brown Gravy
W	Farina	Mashed Potatoes	Catsup
E	Fresh Milk	cold Stewed Tomatoes	Parsley Potatoes
D	Link Sausage	(sauce dishes)	Lima Beans
N	Hot Cakes	Celery & Radishes	3-Minute Cabbage
E	Syrup	Fresh Apples	Mixed Green Salad
S	Fried Potatoes	Cottage Cheese	French Dressing
D	Cinnamon Coffee Cake	Bread/Butter Substitute	Cream Pie
A	Bread/Butter Substitute	Peanut Butter/Jelly or Jam	Coffee
Y	Bread	Cookies - Coffee	Bread/Butter Substitute

	Grapefruit	Noodle Soup	Creole Pork Steaks
	Dry Cereal	Roast Turkey	Brown Gravy
T	Cracked Wheat	Giblet Gravy	Steamed Potatoes
H	Fresh Milk	Mashed Potatoes	Red Beans
U	Creamed Diced Ham	Cut Green Beans	Stewed Corn
R	Hot Biscuits	Head Lettuce	Celery and Radishes
S	Jam	Russian Dressing	Butterscotch Pie
D	Fried Potatoes	Ice Cream	Bread
A	Fruit Roll	Molasses Cookies	Butter Substitute
Y	Bread – Coffee	Bread – Coffee	Coffee
	Butter Substitute	Butter Substitute	
		Peanut Butter, Jelly or Jam	

	Orange	Hamburger Steak	Baked Salmon
	Dry Cereal	Brown Gravy	Tartar Sauce
F	Rolled Oats	Catsup	Gravy
R	Fresh Milk	Parsley Potatoes	Hash Brown Potatoes
I	Scrambled Eggs	Brown Sweet Potato	Spaghetti Creole
D	Toast	3-Minute Cabbage	Buttered Asparagus
A	Jam	Mixed Green Salad	Head Lettuce
Y	Hot Cakes	French Dressing	Russian Dressing
	Syrup	Cottage Cheese	Ice Cream
	Fried Potatoes	Frozen Peach Pie	Angel Cake
	Nut Roll	Bread – Coffee	Bread
	Butter Substitute	Butter Substitute	Butter Substitute
	Bread	Peanut Butter	Coffee
	Coffee	Jelly or Jam	

	Grapefruit	Boiled Fresh Ham	Swiss Steak
	Dry Cereal	Gravy	Catsup
S	Farina	Mashed Potatoes	Parsley Potato
A	Fresh Milk	Combread	Baked Beans
T	Link Sausage	Creamed Celery	Cold Stewed Tomatoes
U	French Toast	and Carrots	(sauce dishes)
R	Syrup	Head Lettuce	Cold Slaw with
D	Fried Potatoes	Mayonnaise	Sweet Sour Sauce
A	Cinnamon Roll	Cottage Cheese	Chocolate Pie
Y	Bread	Canned Apricots	Bread
	Butter Substitute	Fruit Cake	Butter Substitute
	Coffee	Bread – Coffee	Coffee
		Butter Substitute	
		Peanut Butter	
		Jelly or Jam	

	Orange	Vegetable soup	Roast Turkey
	Dry Cereal	Chili con Carne	Dressing
S	Cracked Wheat	Gravy	Gravy
U	Fresh Milk	Hash Brown Potato	Buttered Peas
N	Fried Eggs	Spaghetti	Mashed Potatoes
D	Toast	Buttered Spinach	Hot Biscuits
A	Jelly	Celery and Radishes	Russian Dressing
Y	Fried Potatoes	Cottage Cheese	Mixed Green Salad
	Doughnuts	Jello	Bread
	Bread	English Rocks	Apple Pie and
	Butter Substitute	Bread – Coffee	Ice Cream
	Coffee	Butter Substitute	Jelly
		Peanut Butter	Butter Substitute
		Jelly or Jam	Coffee

Approved By:

/s/

R. E. Burton,
Project Manager

The following was a reprint of the Olympic Commissary Company's menu.

HANFORD SECURITY – JUNE 1, 1949

The following provides information on Hanford Security other than the 300 Area.

Operating Areas:

100 – Three "Piles" (reactors) – 100-B, D and F

200 North – Three irradiated fuel storage buildings – 200 N, P and R

200 East – One separation plant – 221-B Canyon, 224-B reduction and 222-B technical laboratory (analyzed process samples from east and west areas)

200 West – One separation plant – 221-T Canyon and 224-T reduction and one final product processing area – 231

Off-Site Shipments – Provided security of off-site product shipments from Hanford to mainly Los Alamos, New Mexico. Shipments were made in a modified Army hospital railcar (code name – BABY)

Personnel, weapons and protective equipment:

200 East and North Areas

Personnel – 70

Equipment –	M-8 light armored tank		1
	Sedans – Pontiacs '48 w/radios		4
	Ambulances		2
	Weapons carriers		1
Weapons –	Colt pistols, 5 in. barrels	.38 cal.	59
	Colt pistols, 4 in. barrels	.38 cal.	15
	S&W pistols, 5 in. barrels	.38 cal.	41
	S&W pistols, 4 in. barrels	.38 cal.	15
	Gas Guns	37 MM	1
	Thompson Sub-machine guns	.45 cal.	16
	Winchester, Model 97 riot guns	12 gauge	12
	Carbines	.30 cal.	7
	Cannon	37 MM	1
	Browning Machine Gun	.50 cal.	5
	Browning Machine Gun	.30 cal.	1
	Rifles, M-1	.30 cal.	2
Ammunition –	50 caliber	1380 rounds	
	30 caliber	3200 rounds	
	45 caliber	700 rounds	

38 caliber	1174 rounds
12 gauge shotgun	715 rounds
37 MM gas gun	6 rounds

M-8 Light armored car ammunition

37MM	30 rounds with shot
	5 rounds canisters m/2
	20 rounds M51-Al
	16 rounds M-63
.30 caliber	8 boxes (250 rounds)
	6 boxes (105 rounds)

Communications:

Dial telephones in all buildings.
Public Address system maintained for evacuation purposes.
Short-wave Radio receiver and transmitter located in patrol headquarters.
A crash alarm system used for emergency purposes only.
A battery magneto phone system used between guard towers and patrol headquarters.
A battery magneto phone system between Emergency Officer and all areas.

200 West and 100 Areas:

Personnel
200 West – 129
100 B – 42
100 D – 52
100 F – 69

Equipment, weapons, ammunition quantities consistent with that given for 200 East and 200 North based on assigned manpower.

Off-Site Shipments:

Personnel – 8 per shipment

Equipment – At Hanford – Two radio equipped sedans

– Off Site – Specially equipped former Army hospital railcar, which has a vault that has been welded to the railcar, that is a durable fire-resistant structure, and that has a 3-way combination steel door.

Weapons and ammunition –

12 – .38 caliber revolvers, w/1700 rounds
5 – Thompson sub-machine guns, w/2300 rounds
6 – 12 gauge riot guns, w/709 rounds, 00 buck shot
2 – 37 MM gas and riot guns, w/235 rounds 37 gas shells and 52 shrapnel shells

RICHLAND TOWN'S VALUE – 1946 versus 1950

Calendar Year: 1946

- Value $42,201,000
- Population 17,900
- Number of dwellings 4795

Calendar Year: 1950

- Value $79,720,000 with $2,000,000 to be spent
- Population 22,000
- Number of dwellings 5765

HANFORD POPULATION

AEC versus CONTRACTORS – 1951 AND 1952

	1/31/51	6/30/51	12/31/51	1/31/52	6/30/52
AEC	341	346	358	365	452
Contractor	14,206	15,819	16,667	16,486	14,783
Total	14,547	16,165	17,025	16,851	15,235

Richland's Newspaper – "The Villager"

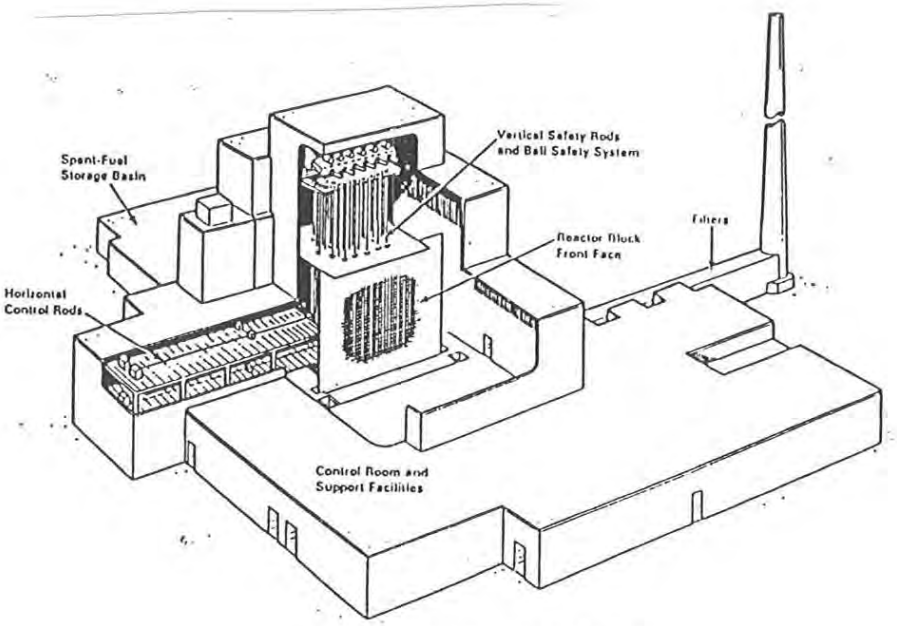
The first issue of "*The Villager*" newspaper, a HEW Employees Association supported effort, was published on March 8, 1945 after a membership drive was held in which more than 2000 members agreed to support Village, Inc. The members paid $2.00 for membership and initiation fee. The newspaper was distributed free to the entire community of Richland, with income from advertising over and above expenses going to a general fund to provide money for "providing means of contributing to the welfare, recreation, comfort, entertainment and education" of project employees and their families.

On April 9, 1945, a library of 5300 books was opened. Villagers, Inc. underwrote this effort. *The Villager* newspaper grew from a small tabloid to a full-size 24 to 40 page weekly. The original $2.00 membership fee and free delivery policy was changed in 1947, with the subscription rate increased to $3.25 per year.

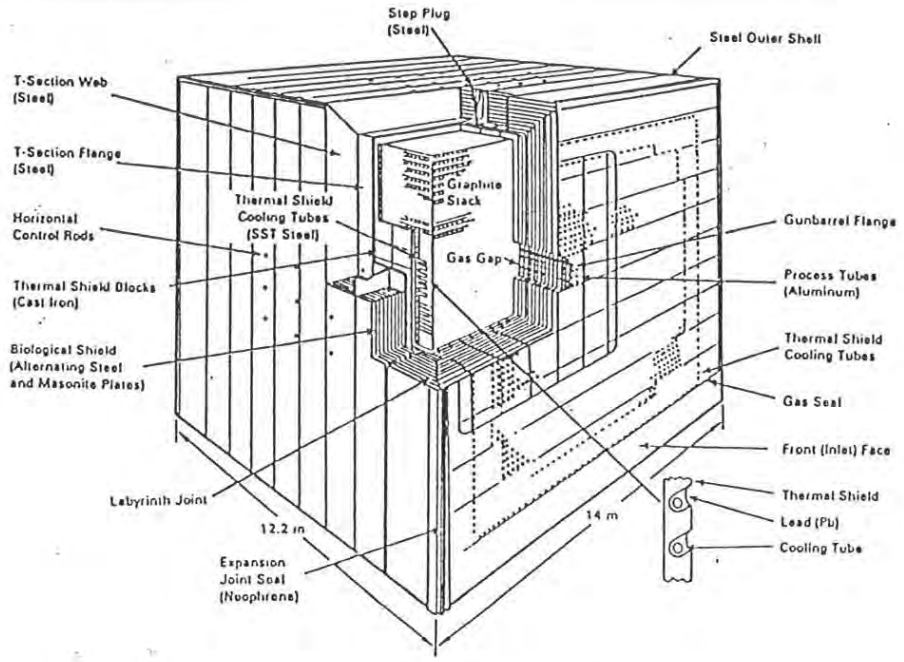
Originally, the copy for the newspaper was reviewed by project officials for security checks prior to publication. A short time after the war, prior checks of the copy was abandoned.

In its March 2, 1950 issue, *The Villager* announced that it was suspending publications and on March 14, 1950, a public announcement was made that the newspaper had been sold to Columbia Basin Publishers, Inc. of Pasco due to evidence of decline in membership, subscriptions, and income.

The Villager was never subsidized in any manner by the U.S. Government or any of its contractors.

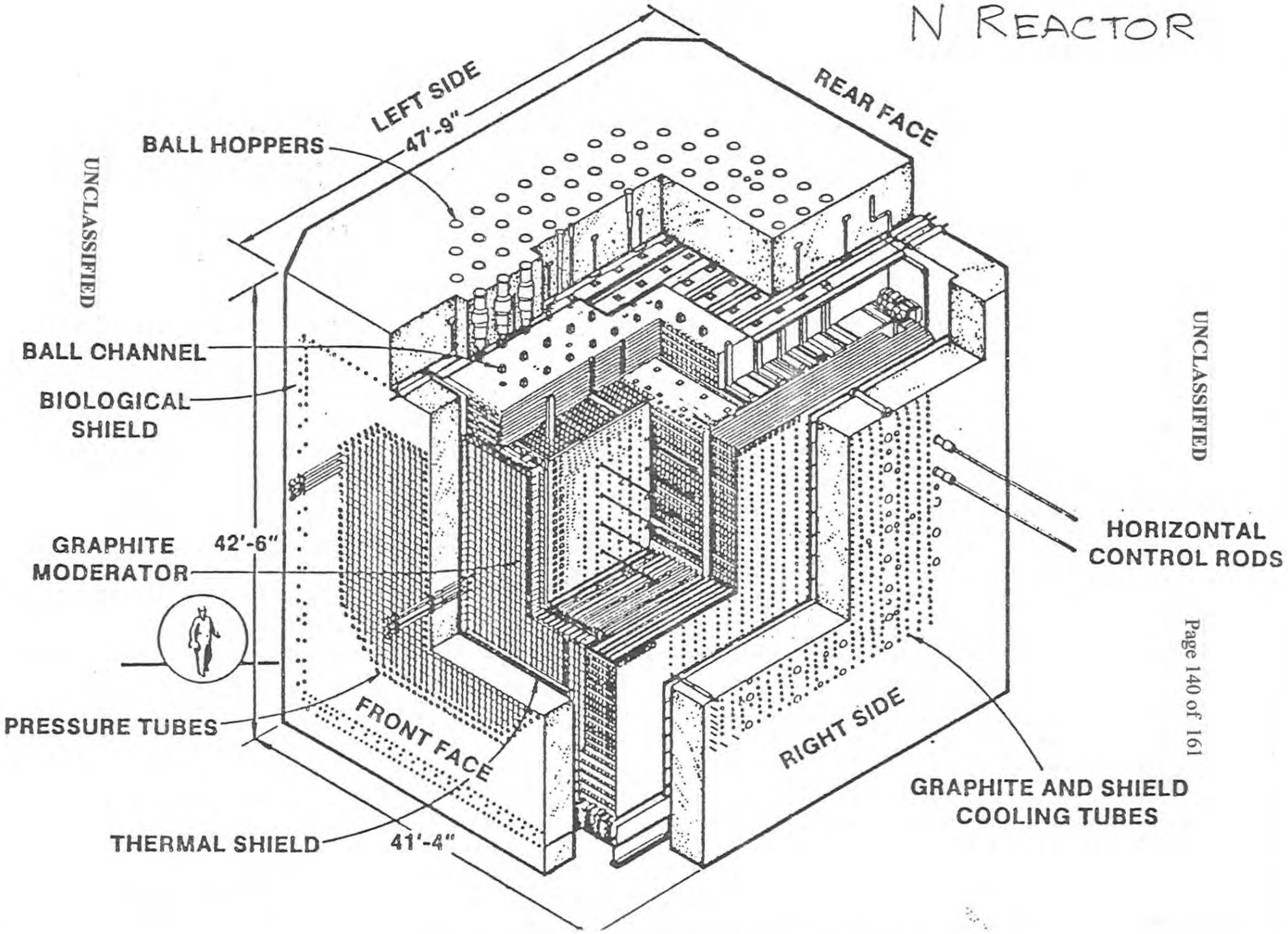


Typical Reactor Facility



Reactor-Block Construction

N REACTOR



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REACTOR CONSTRUCTION INFORMATION

GENERAL

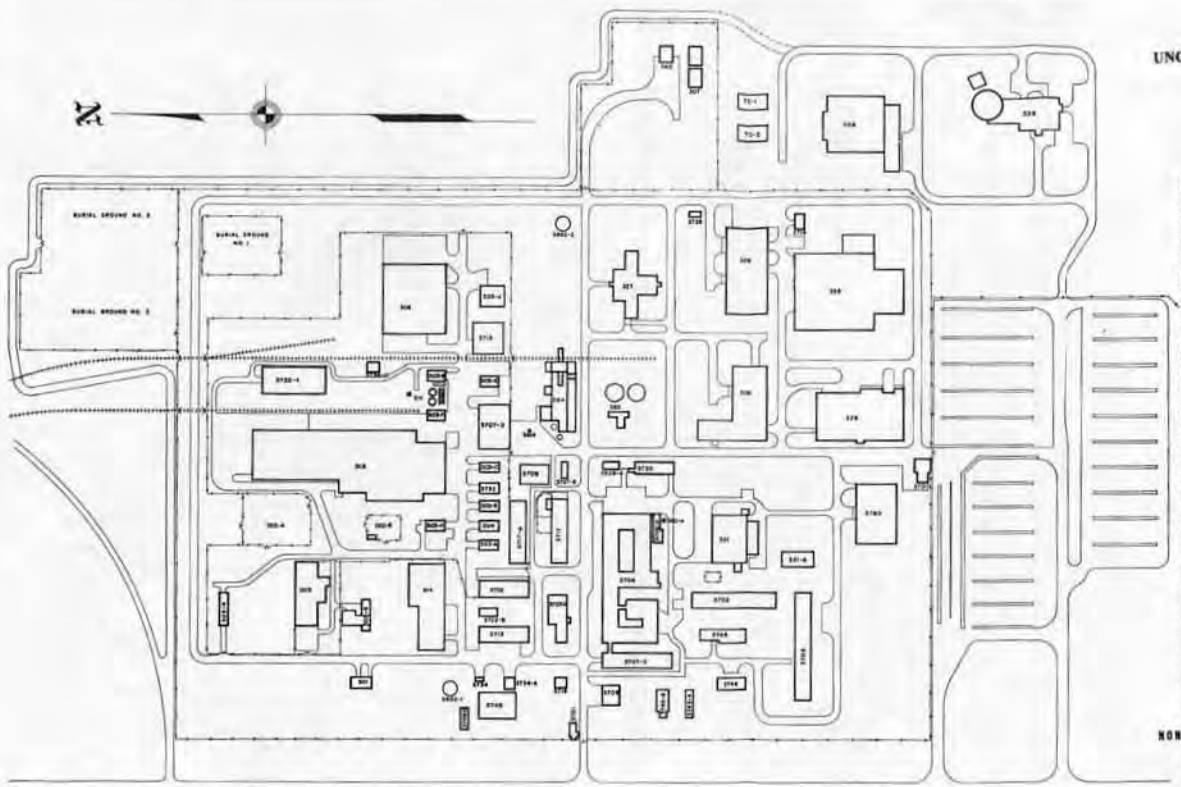
1. Reactor pile consisted of 90 - 100 thousand pieces of machined graphite.
2. A pile had approximately 500 pieces of graphite of different details.
3. Each graphite block was machined tolerance was to thousands of an inch.
4. Each block was machined smooth and was free of voids, chips and/or cracks.
5. All graphite blocks for all if the Hanford piles (reactors) were fabricated at Hanford and installed by Hanford workers.

BLOCK LABOR COST (typical)

Type	No. Pieces	x	Unit Cost	=	Total Cost
Surface Blocks (Solid)	88,205		$0.406		$35,800
Surface Blocks (Drilled)	20,792		0.481		10,000
Drilling	20,792		0.340		7,070
Chamfering	64,895		0.095		6,180
Cut Off (Solid)	88,205		0.226		19,900
Cross Keyways	27,430		0.550		15,500
Longitudinal Keyways	2,500		1.680		4,200
Optimum Cost (Labor Only)					$98,250

BLOCK FABRICATION COST

Process	105-DR	105-H
Raw Material Consumed	3,251.4 tons	2,525.5 tons
Material cost @ $615.385/ton	$2,000,862.79	$1,554,154.82
Labor Cost – Machining & lay-up	$ 734,189.75	$ 451,189.61
Total Pile Blocks Required	87,492	100,821
Labor and Material Cost	$2,735,052.54	$2,005,344.43
Cost per Finished Block – Labor	$ 22.97	$ 15.41
– Material	$ 8.39	$ 4.48
– Total	$ 31.26	$ 19.89
Actual Material per Pile	2,665 tons	2,582 tons
Material Cost per Pile	$1,640,001.03	$1,588,924.07
Labor & Material – Unit Cost	$2,374,190.78	$2,040,113.68
Cost per Block	$ 27.14	$ 20.24



300 AREA
PRESENT PLOT PLAN

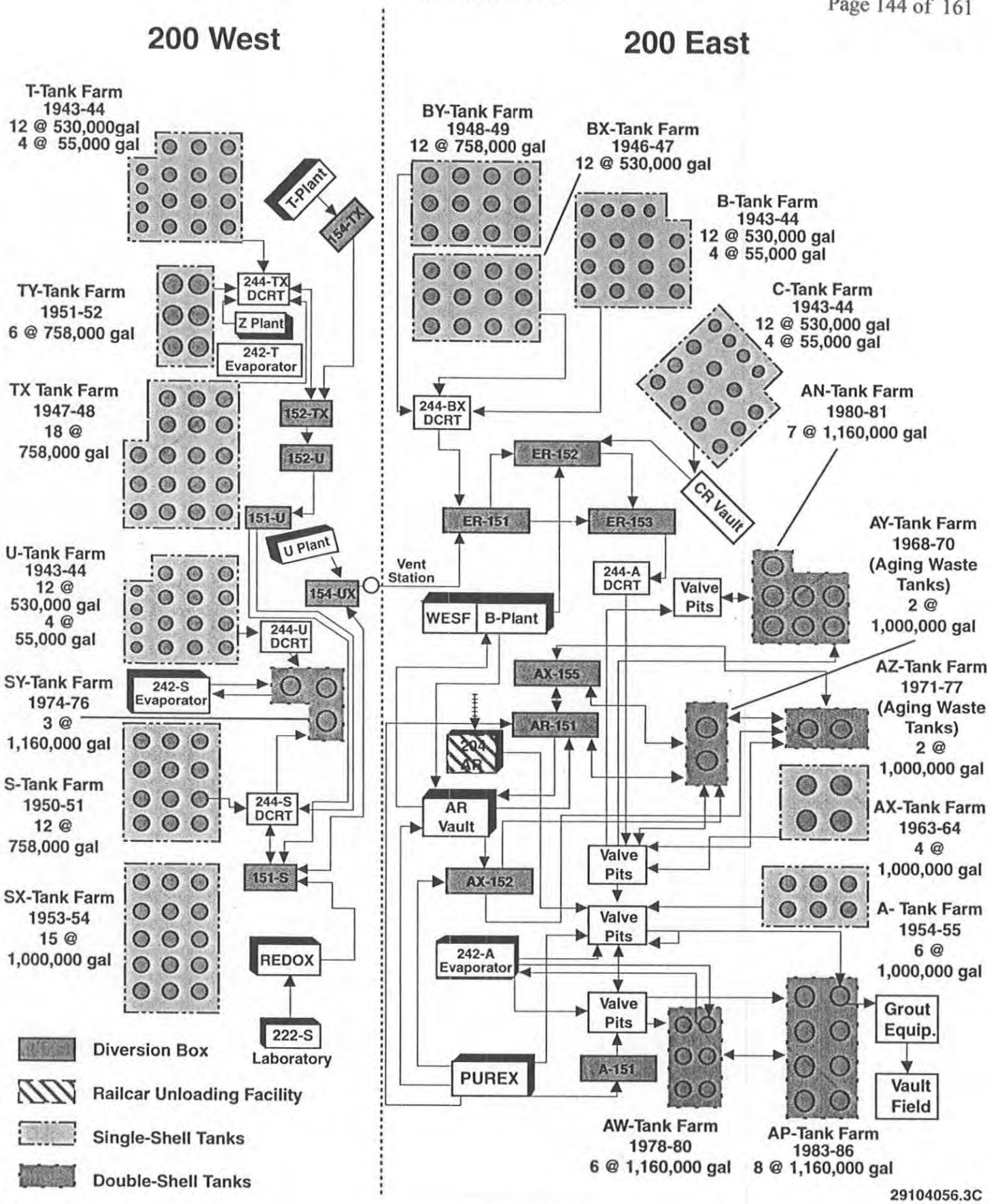
SK-3-7051

REVISION #2
6/30/58

Hanford Waste Storage Tanks

as of 1970

Tank Farm	Tanks per Farm	Capacity per Tank (Gallons)	Capacity per Farm (Gallons)	Year Constructed
200 East Area				
A	6	1,000,000	6,000,000	1954-55
AX	4	1,000,000	4,000,000	1963-64
AY	2	1,000,000	2,000,000	1968-69
B	16	54,000 (4) 530,000 (12)	6,578,000	1943-44
BX	12	530,000	6,360,000	1946-47
BY	12	758,000	9,096,000	1948-49
C	16	54,000 (4) 530,000 (12)	6,578,000	1943-44
200 West Area				
S	12	758,000	9,096,000	1950-51
SX	15	1,000,000	15,000,000	1953-54
T	16	54,000 (4) 530,000 (12)	6,578,000	1943-44
TX	18	758,000	13,644,000	1947-48
TY	6	758,000	4,548,000	1951-52
U	16	54,000 (4) 530,000 (12)	6,578,000	1943-44
Total	151		96,056,000	


200 West
200 East
T-Tank Farm
1943-44
12 @ 530,000gal
4 @ 55,000 gal
T-Plant
154-TX
TY-Tank Farm
1951-52
6 @ 758,000 gal
244-TX DCRT
Z Plant
242-T Evaporator
TX Tank Farm
1947-48
18 @
758,000 gal
152-TX
152-U
151-U
U Plant
U-Tank Farm
1943-44
12 @
530,000 gal
4 @
55,000 gal
154-UX
244-U DCRT
SY-Tank Farm
1974-76
3 @
1,160,000 gal
242-S Evaporator
S-Tank Farm
1950-51
12 @
758,000 gal
244-S DCRT
151-S
SX-Tank Farm
1953-54
15 @
1,000,000 gal
REDOX
222-S Laboratory
Diversion Box
Railcar Unloading Facility
Single-Shell Tanks
Double-Shell Tanks
BY-Tank Farm
1948-49
12 @ 758,000 gal
BX-Tank Farm
1946-47
12 @ 530,000 gal
B-Tank Farm
1943-44
12 @ 530,000 gal
4 @ 55,000 gal
C-Tank Farm
1943-44
12 @ 530,000 gal
4 @ 55,000 gal
AN-Tank Farm
1980-81
7 @ 1,160,000 gal
244-BX DCRT
ER-152
CR Vault
ER-151
ER-153
Vent Station
244-A DCRT
Valve Pits
WESF
B-Plant
AY-Tank Farm
1968-70
(Aging Waste Tanks)
2 @
1,000,000 gal
AX-155
AZ-Tank Farm
1971-77
(Aging Waste Tanks)
2 @
1,000,000 gal
AR-151
204-AR
AR Vault
AX-Tank Farm
1963-64
4 @
1,000,000 gal
AX-152
Valve Pits
A- Tank Farm
1954-55
6 @
1,000,000 gal
242-A Evaporator
Grout Equip.
A-151
PUREX
Vault Field
AW-Tank Farm
1978-80
6 @ 1,160,000 gal
AP-Tank Farm
1983-86
8 @ 1,160,000 gal
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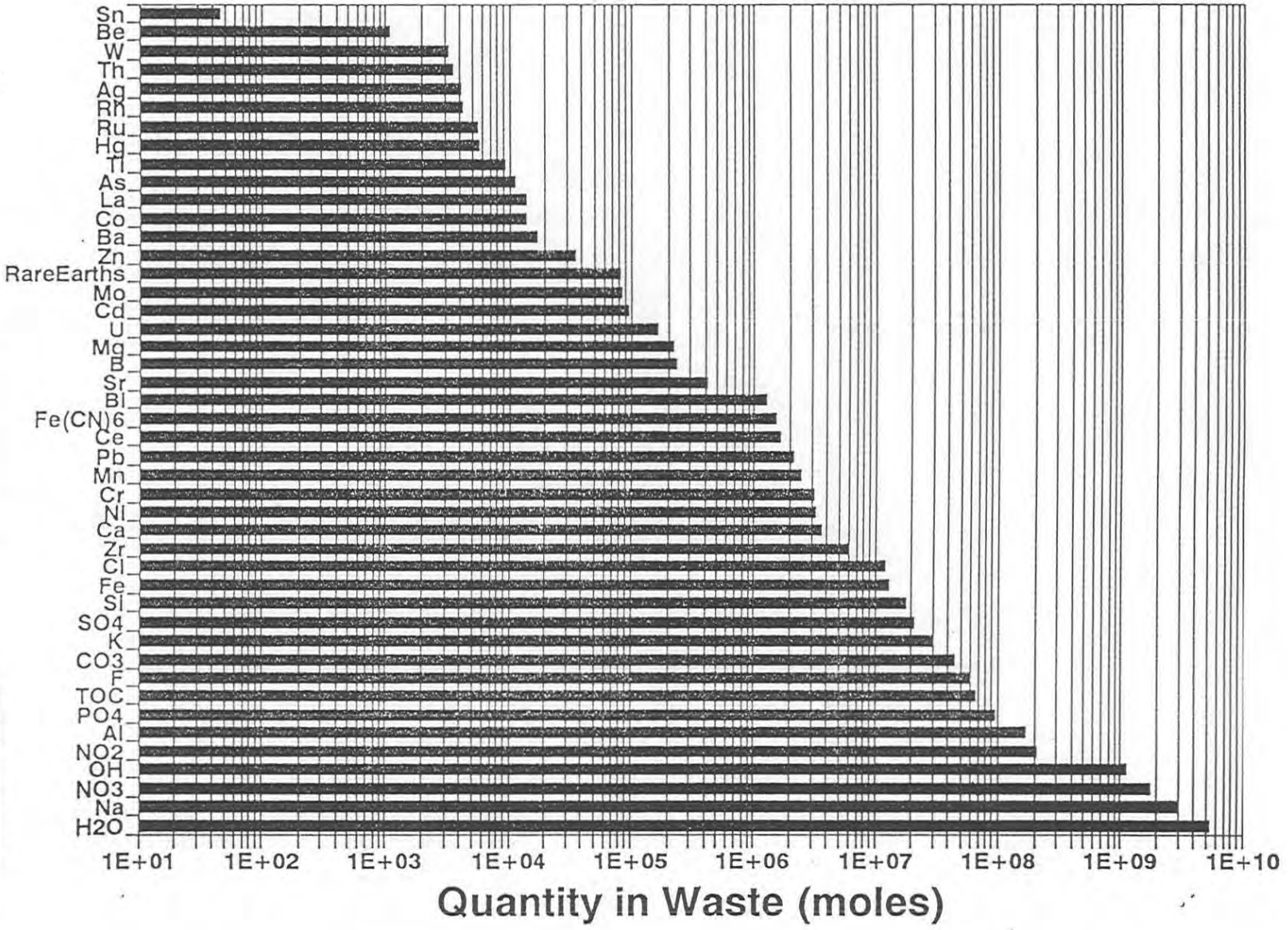
HANFORD TANK WASTE CHEMICAL INVENTORY



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Radio Chemical Operations at Hanford*

1944 to 1956	BiPO4 – Plutonium Recovery
1945 to 1957	Peroxide -- Purification of Plutonium
1949 to Present*	Oxalate – Purification of Plutonium
1949 to 1965	Fabrication of Plutonium
1951 to 1966	REDOX – Uranium, Plutonium and Neptunium
1952 to 1957	TRP Extraction of Uranium
1952 to Present*	Calcination of Uranium to UO3
1956 to Present*	PUREX – Uranium, Plutonium and Neptunium
1961 to 1967	Strontium Purification at Hot Semiworks
1964 to Present*	Reclamation of Plutonium from scrap
1968 to Present*	Waste Fractionization – Cesium and Strontium

* Data issued in 1969, some processes continued for a longer time span

Hanford Site Miscellaneous Information

Electricity --Usage and Total Cost – Plant – FY 1967

Maximum Demand KW	Date	Average Load Factor	MWH	Cost**	Dist. Expense	Total Cost
297,566*	Dec. 1966	75.9%	1,979,157	$4,868,191	$632,410	$5,500,601

Cost per KWH = $0.278

* Purchased demand – total plant maximum load for FY 1967 – 312,913 KW in January 1967
** Includes use of facilities under transmission agreement

Total Demand, Energy Used and Purchase Cost

Fiscal Years	MWH	Peak Measured Demand, KW	BPA Cost*	Cost/ KWH
1943 (1 Mo.)	239	437	$ 1,885	$0.789
1944	50,106	16,432	232,275	0.464
1945	303,712	55,134	1,044,602	0.344
1946	394,236	61,357	1,240,950	0.315
1947	336,429	52,785	1,099,350	0.327
1948	321,783	53,976	1,103,925	0.343
1949	438,887	72,621	1,245,142	0.284
1950	533,334	58,748	1,447,437	0.271
1951	627,092	70,165	1,639,658	0.261
1952	700,000	81,705	1,819,000	0.260
1953	826,620	108,610	2,123,276	0.257
1954	988,423	119,616	2,437,728	0.247
1955	989,946	176,671	2,608,718	0.264
1956	1,336,651	188,551	3,311,679	0.248
1957	1,615,500	260,663	3,851,997	0.238
1958	2,170,470	299,550	5,078,564	0.234
1959	2,376,276	325,577	5,484,641	0.231
1960	2,542,826	339,379	5,747,365	0.226
1961	2,634,307	348,462	6,014,606	0.220
1962	2,533,932	350,895	6,038,007	0.238
1963	2,674,506	390,877	6,559,257	0.245
1964	2,821,959	402,327	6,837,700	0.242
1965	2,777,401	402,178	6,296,964	0.227
1966	2,128,153	302,460	5,091,139	0.239
1967	1,979,157	297,566	4,868,191	0.246
Total	34,101,945	Total	$83,224,056	Ave. $0.244

Electrical Power Forecast:

Fiscal Year	Plants Usage (MWH)
1968	1,815,072
1969	1,836,096
1970	1,850,112
1971	1,864,128
1972	1,864,128

*Includes energy used in City of Richland for years 1943 to 1958, inclusive.

Electrical Transmission Plant – June 30, 1967	230 KV	115 KV	Distribution lines
Plant – (13.8 KV, 7.2 KV & 2.4 KV)			193.0 miles
Plant Street & Fence Lighting			95.0 miles
Conductor Circuit – Miles	73.0	0.0	
Number of Substations	6	1	
Total Substation Capacity (kW)	471,250	24,374	

PLANT CHARACTERISTICS, October 1966

Land Area	Square Miles
100 Areas	4.2
200 Areas	6.4
300 Area	0.1
600, 700, 3000, etc. Areas	435.0
Subtotal	445.7
Richland	15.7*
Wahluke Slope control Zone A**	134.2
Bonneville Power Administration	0.1
Total	595.7

* Includes 1.3 square miles in Richland "Y"
** Zone A includes 40.6 square miles still held by Bureau of Reclamation.

BUILDING ELEVATIONS AT 100 AREAS – Feet above sea level

Building	B	C	KE-KW	N
River Pump House Floor	427.0	427.0	421.0	421.0
Reservoir Pump House Floor	445.0			
Reservoir Bottom	445.0			
Filter Plant operation Floor	475.0	493.5	474.0*	455.5
Pile Control Room Floor	468.5	494.0	465.0	454.5
Retention Basin Bottom	422.2	430.0	441.0	430.5
Power House Operation Floor	467.0	467.0	474.0*	476.5
1948 Floor Elevation	415.0	415.0	411.0	407.0
Peak Stage – 1967	410.0	410.0	405.0	400.0

* Control Building (165 Building) controls river pump house, filter plant, process water pumping plant, and power house.

COLUMBIA RIVER – Elevation and Flow at Richland

(All data prior to 1960 precede activation of Priest Rapids Dam)

Feet	Cubic Feet/Second	Item
361	84,000	1894 Floor
357	700,000	High 1943-1961 (1948 Peak)
349	421,000	1943 - 1961 Average Peak
341	129,000	1943 - 1961 Average
350	339,000	1962 - 1966 Average
340	31,000	Low 1943 - 1961 (4/43)
341	116,000	All time average
354	506,000	Peak 1967

TEMPERATURES – Hanford

Date	Temperature, ^{0}F	Item
1912 - 1955	52.8	Average for years
July 27, 1939	115.0	High since 1912
August 4, 1961	113.0	High since 1944
December 12, 1919	-27.0	Low since 1912
February 1 & 3, 1950	-23.0	Low since 1944
1956 – 1965	56.0	Average for years
1966	54.8	Average

PRECIPITATION – Hanford

(Data collected through October 1967)

Date	Precipitation Inches per year	Item
1912 – 1956	6.31	Average for years
1950	11.45	High since 1912
1930	3.38	Low since 1912
1957 – 1966	6.37	Average for years
1967	2.67	January through October

SNOWFALL

(Data collected through 1966)

Average	13.3 inches	1912 – 1966
Low	0.3 inches	Winter 1957 – 1958
High	43.6 inches	Winter 1915 – 1916

WIND

(Data collected through October 1967)

Level	Velocity	Direction
50 feet	7.8 mph (Average)	Northwest (1945 – 1966)
50 feet	72 mph Highest Gust	Southwest (June 6, 1957), since 1945
50 feet	61 mph Highest Gust	Southwest (October 3, 1967)

ROADS

		Miles
Primary roads (asphalt surfaced, 20' or equivalent)		283
Secondary roads (improved gravel surface)		175
Patrol roads and trails (Security Patrol)		125
	Total	583*

* Mileage starts at Saint road (North boundary of the Plat of Richland and covers all areas and installations -- 1966)

Annual maintenance per mile for primary roads, FY 1966 – $375.83 (Excludes seal coating performed by contract)

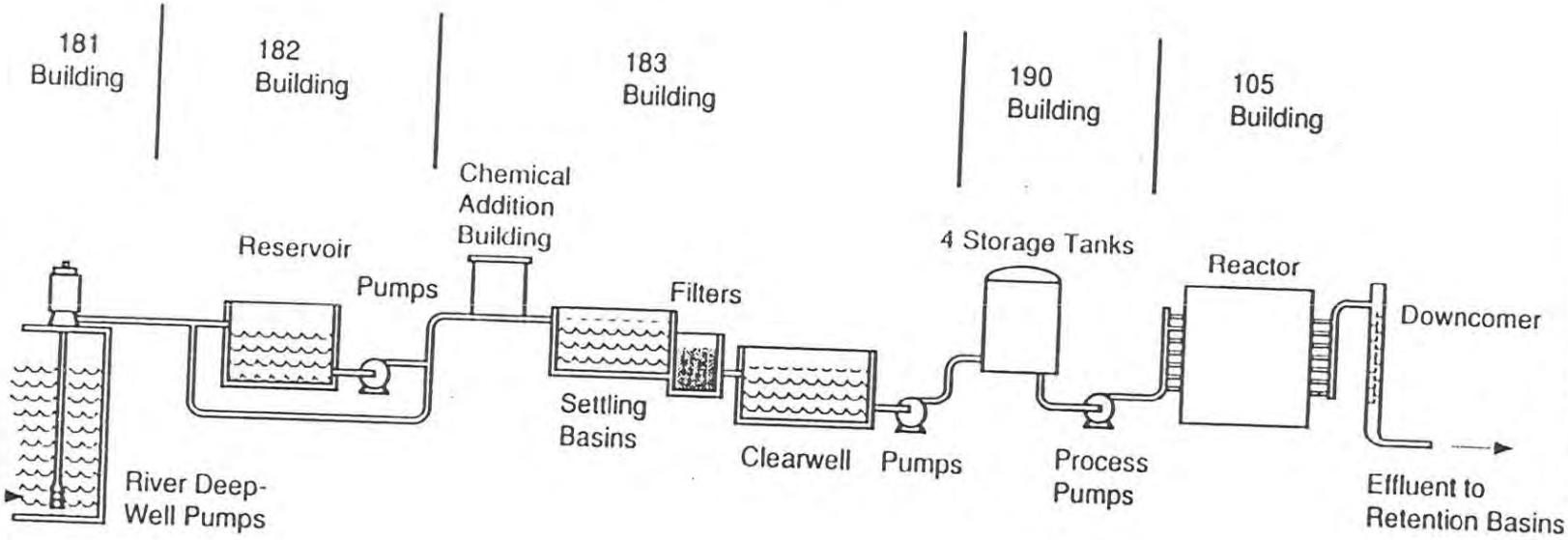


Diagram of Primary Coolant Flow.

RAILROADS

Tracks		Miles
Process track and main		96
Service and yard track		47
	Total	143

Number of turnouts	276
Number of grade crossings	197

Annual maintenance per mile of railroad track, FY 1966 – $1,767.00

CONCRETE

		Cubic Yards
100 Areas		1,051,787
200 Areas		571,292
300 Area and others		108,649
	Total	1,731,728**

**(Equals 1/8 of Coulee Dam, or volume of 50 Washington Monuments)

BUS SERVICE – July 1, 1967

Routes:	Richland Shuttle	6
	Regular Area Routes	10
	Shuttle – Federal Building to Areas and return	2

Operating Data – 1966

	ITT/FSS	Jones	Total
Passengers	1,408,639	1,685	1,410,424
Miles Operated	1,936,351	5,217	1,941,568
Gross Cost	$1,445,537	$1,117	$1,446,654
Cost per mile (average)	0.747	0.214	0.745
Bus Drivers	91	1	92
Buses	113*	1	114

* 71 Plant and 42 Evacuation

Operating Data – 1967

Passengers	1,149,186	298	1,149,484
Miles Operated	1,638,166	2,233	1,685,399
Gross Cost	$1,446,700	$470	$1,447,240
Cost per mile (average)	0.859	0.21	0.858
Bus Drivers	88	1	89
Buses	107*	1	108

* 67 Plant and 40 Evacuation

RICHLAND SCHOOL DISTRICT – Capacity and Enrollment

	Sept. 1946	Sept. 1947	Sept. 1948	Sept. 1949	Sept. 1950	Sept. 1951	Sept. 1952	Sept. 1953**
Permanent Capacity								
Richland	2,248	2,248	3,056	4,292	4,292	5,642	5,810	5,810
North Richland (John Ball)	–	–	676	676	676	676	676	676
Total Capacity	2,248	2,248	3,732	4,968	4,968	6,318	6,486	6,486

Excludes all temporary hutments used from time to time in Richland. John Ball is all hutments.
**Permanent Capacity for September 1953

Enrollment by Schools								
Jason Lee	–	–	–	–	–	458	702	600
Jefferson	326	365	689	476	527	486	547	404
Lewis and Clark	724	855	939	735	830	730	691	808
Marcus Whitman	648	691	879	673	817	639	744	808
Sacajawea	904	1,012	1,087	682	751	457	535	488
Spalding	–	–	–	710	715	610	648	548
Elementary Total	2,602	2,923	3,594	3,276	3,640	3,380	3,867	3,692
Carmicheal Jr. High	–	–	–	838	903	622	688	652
Chief Joseph Jr. High	–	–	–	–	–	701	673	750
Columbia High	678	781	1,083	1,047	852	912	969	716
Richland Total	3,280	3,704	4,677	5,161	5,395	5,615	6,197	5,810
John Ball	–	–	884	481	600	752	551	676
Total	3,280	3,704	5,561	5,642	5,955	6,367	6,748	6,486

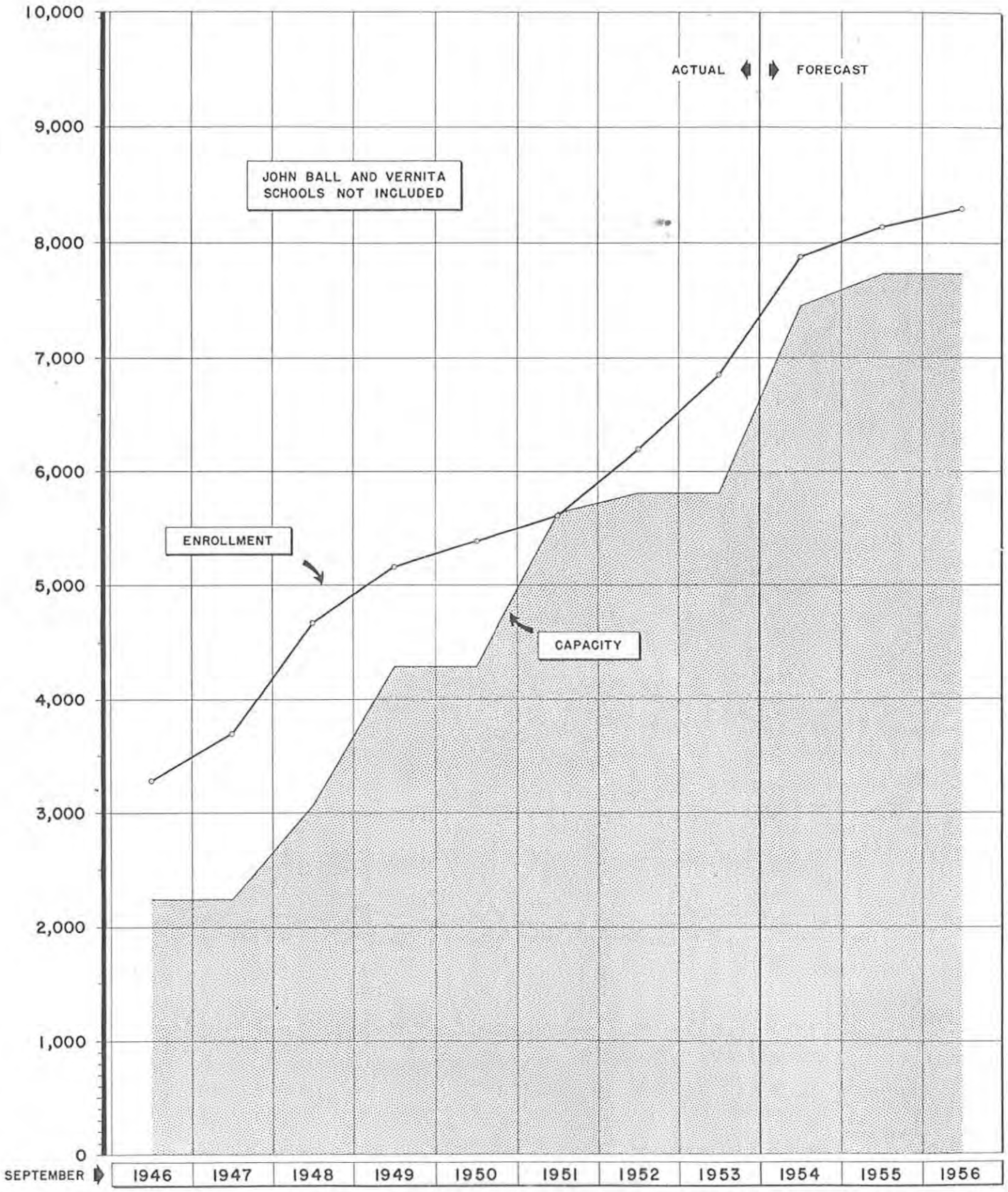
Excludes 16 at Vernita and 46 handicapped pupils

Enrollment By Grades (Including North Richland)

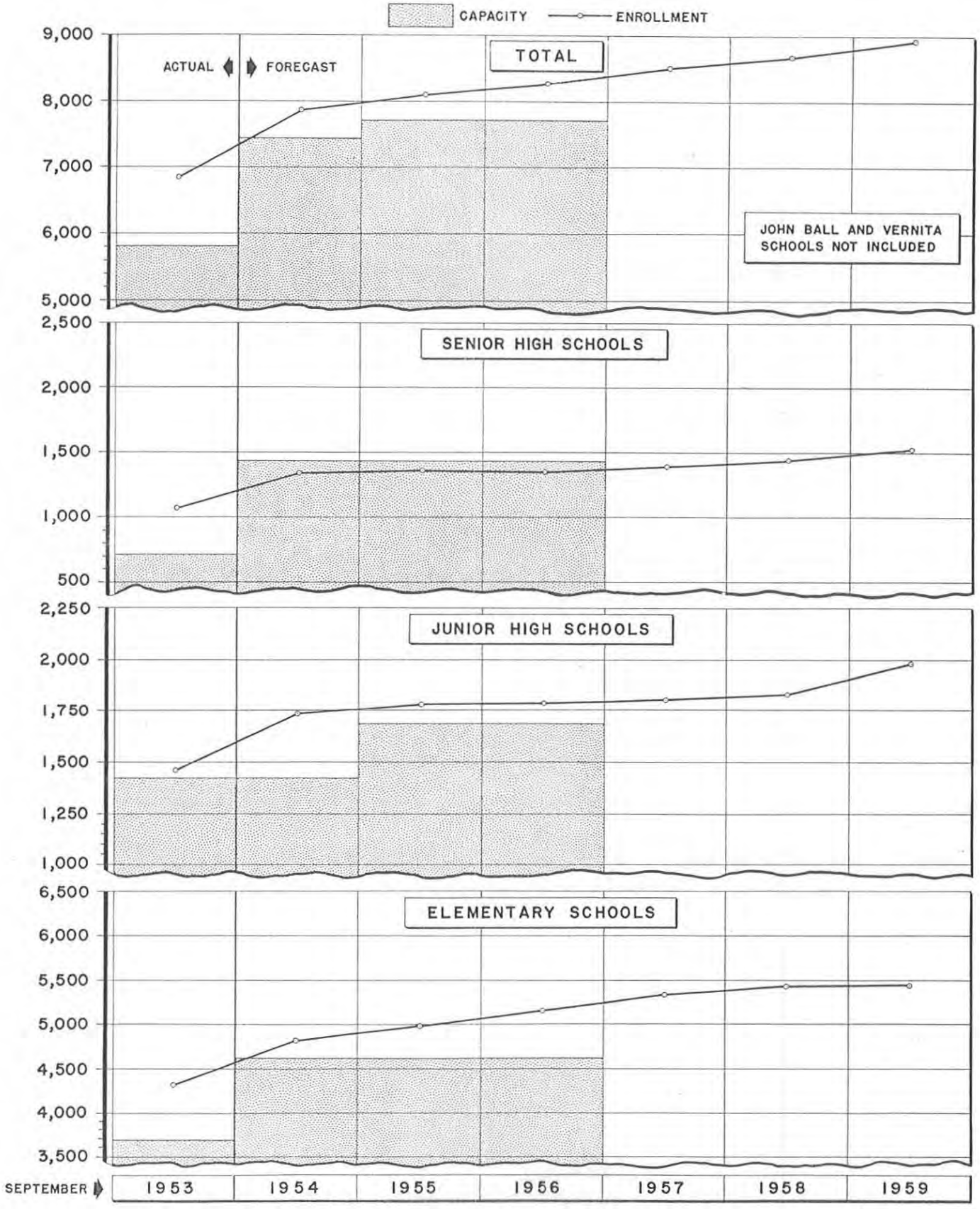
K	302	384	468	549	613	687	829	837*
1	359	375	700	610	603	642	704	952
2	373	362	560	593	600	614	617	724
3	329	400	535	536	602	623	613	658
4	287	348	536	469	528	603	599	645
5	267	296	481	500	471	498	578	623
6	233	273	430	450	489	465	478	605
7	218	251	414	404	460	500	476	520
8	234	234	354	386	405	435	478	475
9	185	246	339	333	372	388	407	471
10	191	185	315	326	309	355	365	437
11	163	183	216	281	291	298	333	331
12	136	162	213	195	248	254	269	302
Post Graduates	3	5	–	10	4	5	2	0
Total	3,280	3,704	5,561	5,642	5,995	6,367	6,748	7,580

*September 1953

RICHLAND SCHOOL ENROLLMENT AND PERMANENT CAPACITY



SCHOOL ENROLLMENT AND CAPACITY FORECAST



#122

Construction Camp – North Richland

AEC-HOO-Engineering and Construction Division – September 1951

Project No. C-178 Directive No. HEW-73

Size:	1,200 Acres
Capacity:	
Barracks – 821/2 Units (capacity varies)	8,855 persons
Trailer Spaces – 2,211 @ 3 ave./space	6,633 "
Bremerton Houses – 201 @ 31/2/space	703 "
Total Rated Capacity	16,191 persons
Army Control:	
Barracks – 641/2 Units (capacity varies)	6,158 persons
Trailer Spaces – (76 reserved @ 3/space) 1200 Block between George Washington and "F" Avenue)	228 "
Bremerton Houses – None	
	6,386 persons
HOO Control:	
Barracks – 18 Units (capacity varies)	2.697 persons
Trailer Spaces – 2135 @ 3/space	6,405 "
Bremerton Houses – 201 @ 31/2/space	703 "
Total Retained for Project Use	9,805 persons
Present Occupancy HOO Connected Employees (9/12/51)	5,903 persons

Camp Structures:

Buildings	No. Each	Controlled by
Barracks – Pasco Type	46	3 by HOO, 43 by Army
Barracks – Hanford Type	146 Wings	60 by HOO, 86 by Army
Trailer Camp Office	1	HOO
Trailer Bath Houses	95	92 by HOO, 3 by Army
Bremerton Houses	201	HOO
Warehouses No. 51, 52, and 53	3	HOO
GE Administration & Security Buildings	1	HOO
Post Office	1	HOO
Hospital	1	
(Wings 2, 3, and 4 except Rooms 141, 142, 182 & 183)		Army
(Wing No. 1 plus above 4 rooms)		HOO

Building (contd.)	No. Each	Controlled by
Fire Station	1	HOO
Sub-subs Office Building No. 87	1	HOO
John Ball Grade School (hutments connected by hallways)	1	HOO
Safety Hutment	1	HOO
Patrol Headquarters Building	1	HOO
Radiation Monitor Buildings	2	HOO
Central Bus Station & Bus Maintenance & Repair Shop)	1	HOO
GE Office Building No. 101	1	HOO
Paint Shops (Building No. 54)	3	Army
Hutments Nos. 39 & 43	2	Army

Facility Structures

Theater	1	HOO
Bank Building	1	HOO
Tavern	1	HOO
Ice House	1	HOO

Business Building	1	HOO
Mess Hall No. 1	1	Army
Mess Hall No. 2	1	HOO
Mess Hall No. 3 & Recreation Hall Being converted to Officers Mess and BOQ)	1	Army
Commercial Bus Terminal	1	Army
Drug Store	1	Private Owner
Food Store	1	Private Owner
Trailer Supply Store	1	Private Owner
Service Stations	2	Private Owner
Department Store	1	Private Owner
Snack Bar (Quonset Hut)	1	Private Owner

Utilities Installed

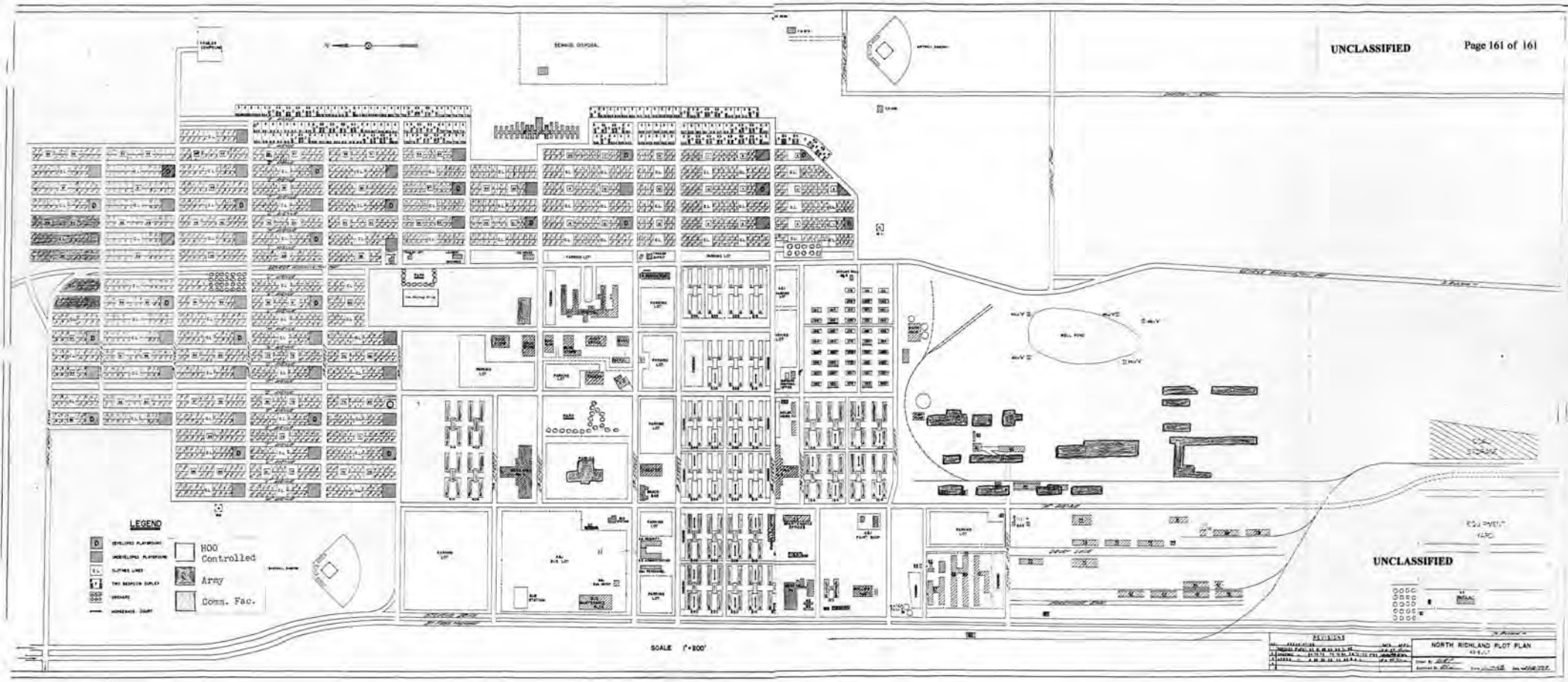
Streets	34.5 miles
Sidewalks	17.0 miles
Water Lines	34.0 miles
Sewer Lines	32.5 miles
Steam Lines	5.5 miles
Electric Lines (Primary Distribution)	7.9 miles
Street Lighting	3.1 miles
Telephone Cable	4.6 miles

Original Estimated Cost:

By General Electric	$17,960,000
Authorized - For capacity of 11,355 workers	15,000,000
Additional work subsequently authorized	2,008,610
Authorized Cost – Sub-total	$17,008,610
Less – community Building, authorized, but not constructed	75,000
Authorized Cost – Total	$16,933,000
Final Total Cost	$19,965,000
Over-run	$ 3,031,390

But:

Original estimate	$17,960,000
Less items in $17,960,000 not constructed, with their share of contingencies, engineering and supervision	$ 3,318,800
Cost estimate for work originally proposed and done	$14,641,200
Items authorized and constructed subsequent to basic directive	1,933,600
Overheads and distributive cost which, by prevailing practice, were not included in proposals	3,083,200
Corrected estimate of Camp as constructed	$19,658,000
Actual cost of Camp as constructed	19,965,000
Over-run could be said to be	$ 307,000


LEGEND
HOO Controlled
Army
Comm. Fac.
SCALE 1"=800'
NORTH RICHLAND PLOT PLAN
UNCLASSIFIED