Westinghouse

WTR-HP-217

ELECTRIC CORPORATION

TESTING REACTOR

P.O. BOX 1075
PITTSBURGH 30, PA.

July 28, 1960

Dr. Marvin Mann
U. S. Atomic Energy Commission
Division of Inspection
Washington 25, D. C.

Dear Dr. Mann:

As per your request of several weeks ago, enclosed are several copies of a report concerning the release of contaminated water to the storm sewers on the Westinghouse Testing Reactor Site. You will note that the activity released is less than the limits required for notification and reports of incidents, and therefore no formal notification was made to the Atomic Energy Commission. As no radioactive wastes have been discharged from this plant site since the fuel element meltdown of April 3, other than the 100-150 gallons mentioned in this report, the average release of radioactivity is less than the limit specified in Appendix B, Table II, 10 CFR 20.

In order to prevent further releases of this type, several steps have been taken: A new 16-inch cast iron line installed below ground will eliminate the need for any plastic lines to the retention basin for the transfer of contaminated water; the 3-inch plastic line presently in use has had all metal couplings removed and line sections are being heat welded to the plastic couplings; the grade on the storm sewers is being reversed so that in case of any future incident of sufficient magnitude to cause ground runoff, this storm sewer may be deviated into one of the retention or holding basins.

If you require any additional information, we will be happy to furnish it.

Very truly yours,

Robert J. Catlin, Manager
Health Physics Section

RJC:jcp

Enclosures

CC: 917

INTERNAL CORRESPONDENCE
FORM 35040

Westinghouse

WTR-HP-216

FROM WTR-Waltz Mill

DATE July 28, 1960

SUBJECT Contaminated Water Release - 6/2/60

WESTINGHOUSE TESTING REACTOR

Mr. M. A. Schultz
Engineering Manager

cc: Mr. E. T. Morris
Mr. A. J. Pressesky (5)
Mr. R. B. Rice (5)
Mr. D. C. Collins
All Health Physics Engineers

Enclosed for your information is a summary report on the contaminated water release to the storm sewer due to failure of the 3-inch plastic coupling in the line to the retention basin, which occurred on June 2.

Robert J. Catlin

Robert J. Catlin, Manager
Health Physics Section

RJC:pew

Enclosure

CONTAMINATED WATER RELEASE TO STORM SEWER

JUNE 2, 1960

6-2-60 On the 12-8 shift, arrangements were made to pump contaminated water from the surge tank to the retention basin via the recently installed 3" plastic line. This line had been checked for tightness just prior to the start of the pumping operation. At the same time, demineralized water was being dumped into the storm sewers to permit cleaning and coating of the tanks. These storm sewers drain from the site in a westerly direction.

At approximately 6:00 a.m., the boiler operator reported a gushing leak near the base of the cooling towers, which was immediately reported to Health Physics by the Technical Operations Shift Supervisor. Pumping operations were stopped at once, and the first line of effort was to contain all contaminated water on the site by throwing up a series of small dams so that the water would be retained. This was rendered more difficult by the large amount of clean water which had already been dumped to the ditch, and further dumping of demineralized water was also terminated.

Estimates of the amount of contaminated water released were complicated by the release of clean water previously mentioned. Examination of the line showed partial failure in two aluminum couplings, located near the cooling tower. Other sections of the hose were coupled with plastic and did not fail. Apparently a quantity of caustic leaked into the pump headers during previous attempts at decontamination and was not neutralized prior to discharge to the retention basin. The pump capacity was rated at 100 gpm, but was being operated below this capacity; in addition, it was pumping against a 30-foot head through approximately 1700 feet of 3" line. The exact time of failure is not known as the area is not under continuous surveillance, but the boiler operator noticed no failures during his 5:00 a.m. rounds. Based on laboratory tests on the remainder of the coupling and estimates of the amount of radioactivity released, the total water spilled was approximately 1000-1500 gallons.

As soon as dams were erected on the immediate site of the spill, one crew went to the west part of the site and erected a dam below the stone bridge crossing the county road, to prevent further drainage off the site. This crew then erected two more dams below the primary dam (referred to as Dam 1); Dam 1 was in place by about 7:15 a.m.; dams 2 and 3 by 12 noon.

Another crew began the task of drumming all high level water within the fenced area. Approximately 1700 gallons of water were thus removed from possible release. State highway crews starting to work on the culvert immediately in front of the reactor building were alerted and advised to postpone further work until cleanup of the spilled water had been effected.

A third crew started taking water samples and processing these for contamination level determinations. These samples were continued and aliquots of most of these set aside for analysis by the State Sanitary Water Group. The results are given in Table I, and the sampling points are shown in Figures 1 and 2. The Health Physics Section offered to process any samples that might be requested or furnished by the State engineers and this offer was accepted by Mr. Heil, the Regional Sanitary Water Engineer, due to a lack of such facilities in the area by the State.

At approximately 9:30 a.m. the first analytical results were obtained, and Mr. Dick Heil, the Regional Sanitary Water Engineer, was notified of the release and action taken. At that time, all release down the stream had been terminated due to the erection of dams 1-3 at 7:15 a.m., but of the material in the streams below the dams, first appearance was noted at 9:40 a.m. at the wooden bridge, and at Sewickley Creek at approximately 10:00 a.m. At this time, most of the contaminated water was held up in dams 1 and 2, and dam 3 was dry. By noon, crews started to increase the size of dams 1, 2 and 3, to prevent possible release due to potential additional water from rain or ground runoff. A dam was constructed at the Rocker House (up stream from WTR) to retain clean water feeding to the drainage ditch, and this water was bypassed by pumping over the hill to the effluent stream by the retention basin. Dams 1 and 2 were partially bypassed to permit flow of water to Dam 3, to avoid excessive pressure buildup. About 5000 gallons of water were pumped to steel storage tanks in the field adjacent to Dam 1. A slight rain in the area increased runoff to the dams, and water levels began to rise. Another crew, using earth moving equipment, worked most of the night increasing the size of the dams and building up the walls.

6-3-60 On Friday, three swimming pool liners were obtained (2 - 35,000 gal., 1 - 30,000 gal.) and set in excavations. This work continued until 7:00 p.m. All liners were filled as soon as installed. Water levels continued to rise, due to runoff.

6-4-60 On Saturday, two more liners (30,000 gals. each) were obtained, set in place, and filled. As water continued to increase, the decision was made to add a large pool (300,000 gals.) and to fabricate a plastic liner on the plant site. Excavation started at 4:00 p.m. and was completed near 1:30 a.m. on June 5, 1960.

6-5-60 At 1:30 a.m., water pumping was started and completed by 3:00 a.m. All dams were emptied. At 4:00 a.m., a ditch was opened to resume water flow, under the direction of plant management and the inspectors of the Commonwealth of Pennsylvania, Department of Health. By 6:00 a.m., the dams were destroyed and normal stream flow permitted.

Surveillance of the pools was provided by the Security force on a 24-hour basis. By 6-7-60, all areas were fenced and posted, and surveillance was provided on an intermittent basis.

It is estimated that no more than 10 per cent of the total spill (100-150 gallons) was released from the site. Since the activity of the spilled water was of the order of 5×10^{-2} $\mu c/cc$, the total activity released is estimated to be less than 10 microcuries.

The results of follow-up sampling of Sewickley Creek is shown in Table 2.

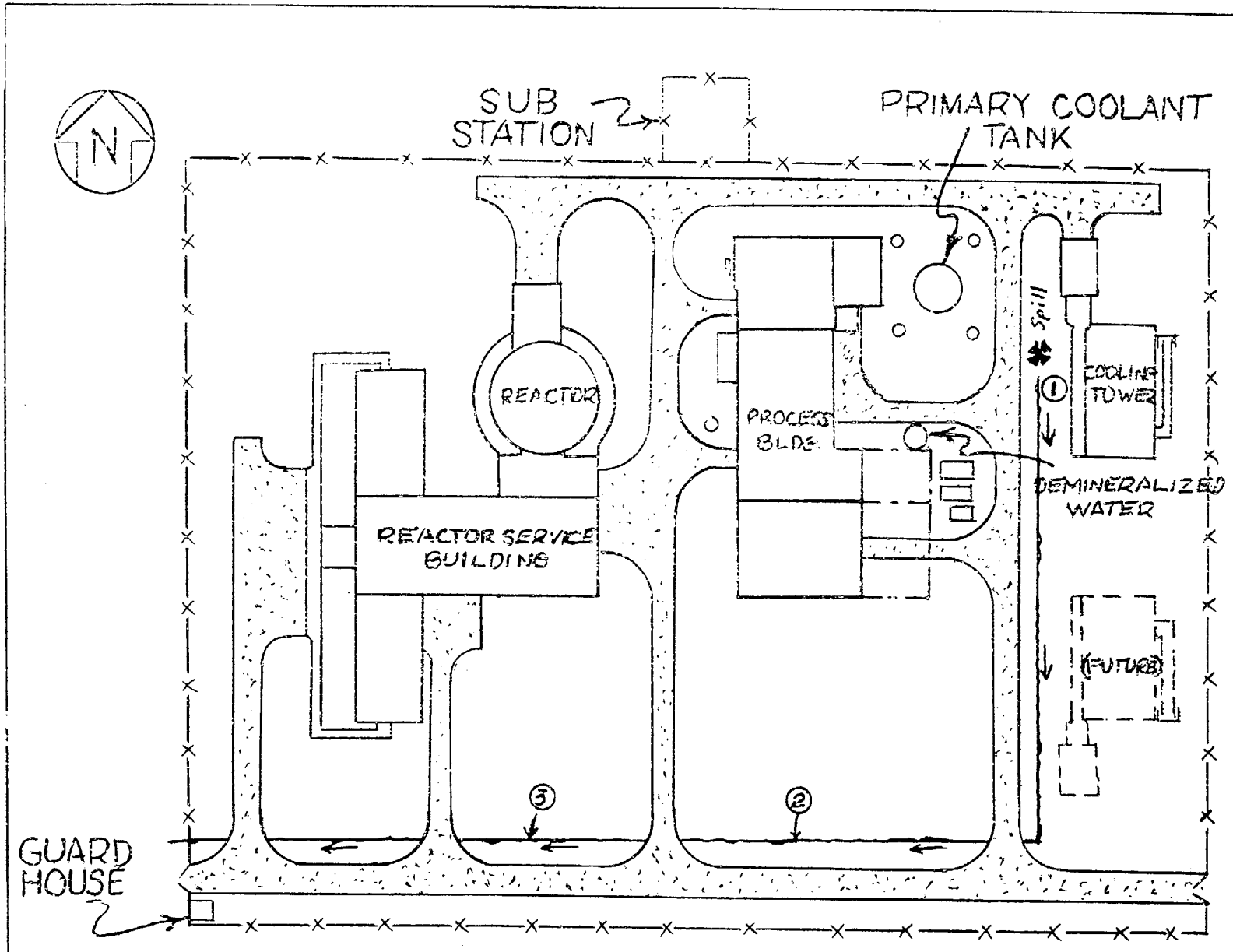
TABLE I

Sample Point	Date	Time	Activity μc/ml
*A. Sewickley Creek at Hunkers	6/2/60	0800	$< 1 \times 10^{-8}$
*B. Sewickley Creek at Waltz Mill	6/2/60	0830	1.5×10^{-8}
" " " " "	6/3/60	2000	9×10^{-8}
" " " " "	6/5/60	2000	5.7×10^{-8}
1. Ditch in front of cooling tower	6/2/60	0840	3.9×10^{-2}
2. Ditch south of Process Building	6/2/60	0930	5×10^{-4}
" " " " "	6/3/60	0215	1.4×10^{-4}
3. Ditch south of Service Building	6/3/60	0215	1.8×10^{-4}
" " " " "	6/5/60	1700	3.8×10^{-5}
4. Ditch in front of plant	6/2/60	0725	1.4×10^{-3}
" " " " "	6/2/60	1600	1.6×10^{-5}
5. First Dam	6/2/60	1300	8.0×10^{-5}
" "	6/2/60	1600	7.9×10^{-7}
" "	6/3/60	0315	2.4×10^{-4}
" "	6/3/60	1200	1.6×10^{-5}
" "	6/4/60	1115	6.4×10^{-6}
" "	6/5/60	1000	1.7×10^{-5}
6. Second Dam	6/2/60	1000	2.3×10^{-3}
" "	6/2/60	1600	7.9×10^{-5}
" "	6/3/60	1200	8.9×10^{-5}
" "	6/4/60	1115	2.0×10^{-5}

*Points above WTR outfall - control samples

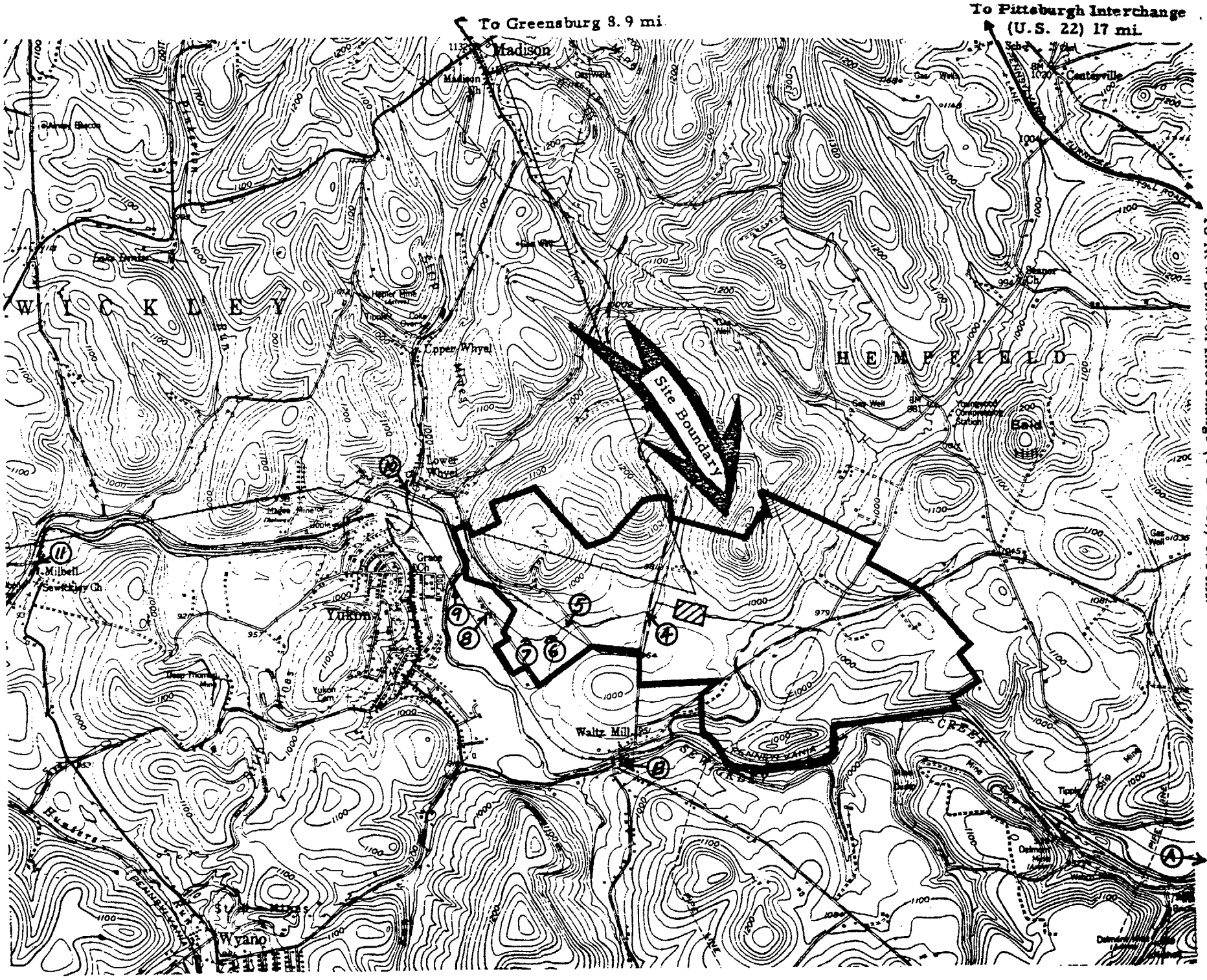
TABLE I (continued)

Sample Point	Date	Time	Activity μc/ml
7. Third Dam	6/2/60	1600	1.4×10^{-4}
" "	6/3/60	1200	4×10^{-5}
" "	6/4/60	1115	1.1×10^{-5}
" "	6/5/60	1000	5×10^{-7}
8. Bridge at edge of Westinghouse Property	6/2/60	0715	6.8×10^{-4}
" " " " " "	6/2/60	0810	2.6×10^{-3}
" " " " " "	6/2/60	0910	1.7×10^{-3}
" " " " " "	6/2/60	1600	7.7×10^{-5}
" " " " " "	6/3/60	0315	4.1×10^{-5}
9. Junction, west effluent & Sewickley	6/2/60	0840	6.4×10^{-6}
" " " "	6/2/60	1600	$< 1 \times 10^{-4}$
" " " "	6/5/60	2000	3.6×10^{-6}
" " " "	6/6/60	0600	3×10^{-6}
10. Sewickley at Yukon Bridge	6/2/60	0719	1.2×10^{-7}
" " " "	6/2/60	1300	4.6×10^{-9}
" " " "	6/5/60	2100	4.5×10^{-8}
" " " "	6/6/60	0615	3.8×10^{-8}
11. Sewickley at Millbell	6/2/60	1300	7.7×10^{-9}
Miscellaneous Sample Points			
Buena Vista water plant intake	6/2/60	1815	7.7×10^{-9}
Youghiogheny River at Sutersville	6/2/60	1827	7.7×10^{-9}
Mouth Sewickley Creek	6/2/60	1840	4.5×10^{-9}
Buena Vista water plant	6/2/60	2015	1×10^{-9}
Youghiogheny River at Sutersville	6/2/60	2030	5.3×10^{-8}
Mouth of Sewickley Creek	6/2/60	2040	1×10^{-9}
Sutersville Bridge	6/6/60	1015	1.1×10^{-8}
Mouth of Sewickley Creek	6/6/60	1030	2.6×10^{-8}
Elizabeth Township intake	6/6/60	1045	3.6×10^{-9}



WESTINGHOUSE TEST REACTOR
WALTZ MILL, PENNA.

Figure 1



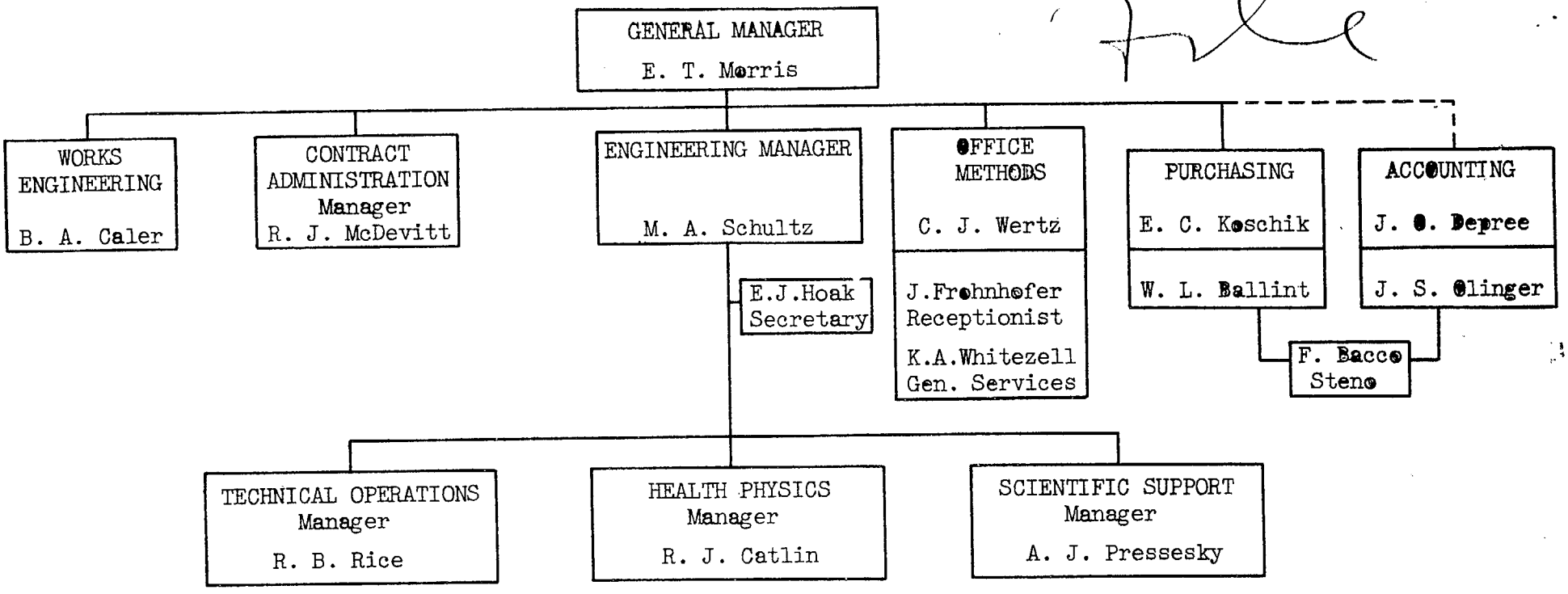
2 1/2" = 1 mile

GEOLOGICAL SURVEY MAP OF THE REACTOR SITE

FIGURE 2

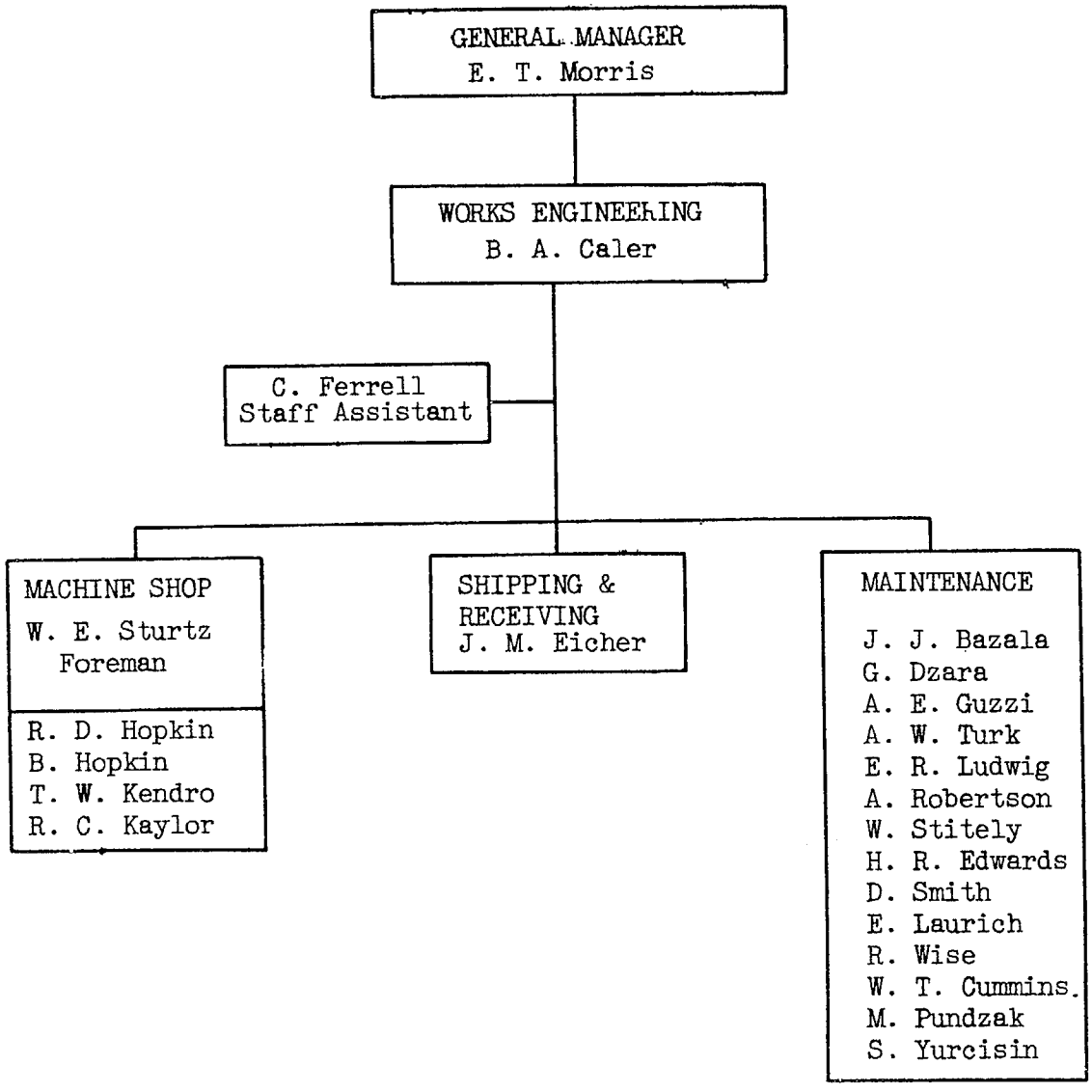
TABLE II

		June 8	June 9	June 10	June 11	June 12	June 13	June 14	June 15
West Effluent	a.m.		6.8×10^{-7}	$< 1 \times 10^{-9}$	6.65×10^{-7}	2.1×10^{-7}	4.5×10^{-6}	2.8×10^{-7}	1.25×10^{-7}
Dam 1	p.m.	4.1×10^{-6}	2.9×10^{-7}	2.2×10^{-6}	2.6×10^{-7}	5.9×10^{-7}	4.7×10^{-7}	2.1×10^{-7}	-
West Effluent	a.m.		1.6×10^{-6}	1.57×10^{-6}	1.86×10^{-6}	7.1×10^{-7}	7.86×10^{-7}	3.5×10^{-7}	3.1×10^{-7}
Entrance to S.C.	p.m.	2.1×10^{-6}	1.13×10^{-6}	8.6×10^{-7}	1.1×10^{-6}	6.1×10^{-7}	6.5×10^{-7}	5.1×10^{-7}	
Sewickley Creek	a.m.		3.1×10^{-9}	3.1×10^{-9}	$< 1 \times 10^{-9}$	$< 1 \times 10^{-9}$	2.75×10^{-9}	2.3×10^{-8}	
Hunkers Bridge	p.m.	$.54 \times 10^{-9}$	$< 1 \times 10^{-9}$	$< 1 \times 10^{-9}$	1.7×10^{-8}	3.9×10^{-9}	1×10^{-9}	1.3×10^{-8}	3.5×10^{-8}
Sewickley Creek	a.m.		$< 1 \times 10^{-9}$	1.35×10^{-8}	1×10^{-9}	5.5×10^{-9}	1.3×10^{-8}	3.6×10^{-8}	2.4×10^{-8}
Yukon Bridge	p.m.	1.2×10^{-9}	$< 1 \times 10^{-9}$	1.1×10^{-8}	6.6×10^{-9}	7×10^{-9}	1.3×10^{-8}	2.7×10^{-8}	
Sewickley Creek	a.m.		$< 1 \times 10^{-9}$	2.7×10^{-9}	1.1×10^{-8}	4.4×10^{-9}	1.8×10^{-8}	$< 1 \times 10^{-9}$	1.4×10^{-8}
Millbell Bridge	p.m.	3.3×10^{-9}	7.7×10^{-9}	1×10^{-8}	6.8×10^{-9}	1.2×10^{-8}	7.5×10^{-9}	2.2×10^{-8}	
Sewickley Creek	a.m.		1.6×10^{-9}	$< 1 \times 10^{-9}$	8.6×10^{-9}	3.1×10^{-8}	8.8×10^{-9}	2.5×10^{-8}	3.3×10^{-9}
Mill Grove Bridge	p.m.	$< 1 \times 10^{-9}$	2.1×10^{-8}	6.7×10^{-9}	5×10^{-9}	1.85×10^{-8}	7×10^{-9}	2.6×10^{-8}	



WTR Interim Organization
7/28/60

WTR-95



WTR Interim Organization
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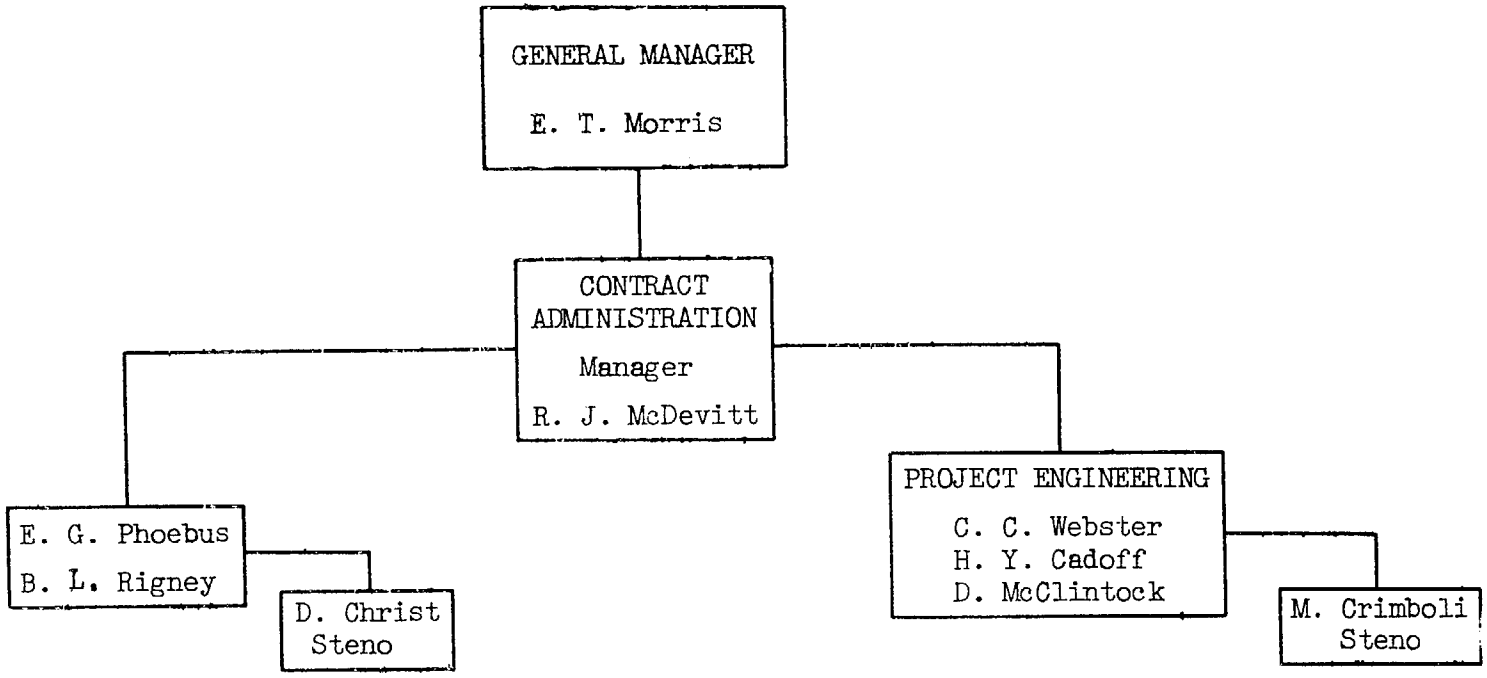
WTR-95A



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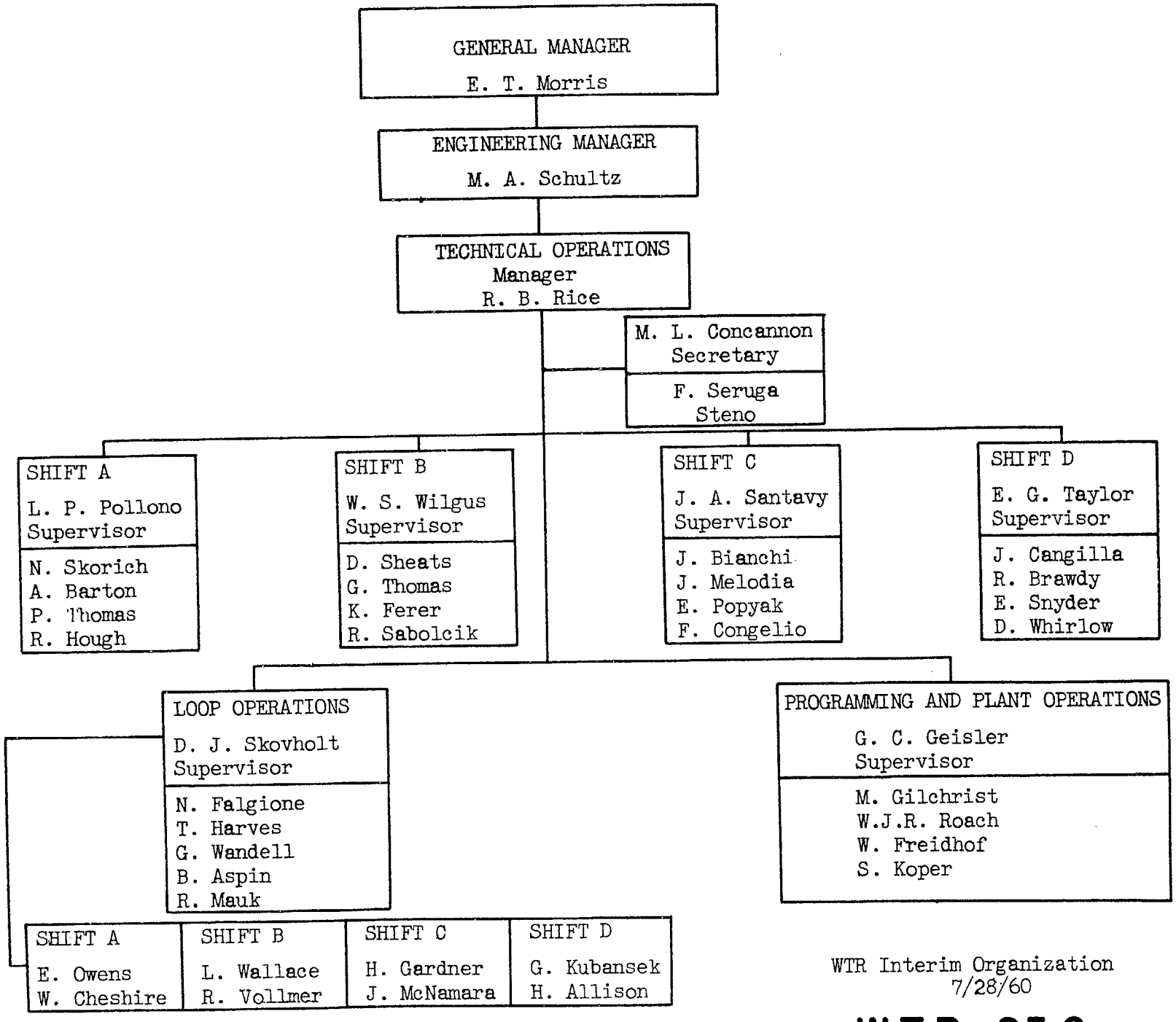

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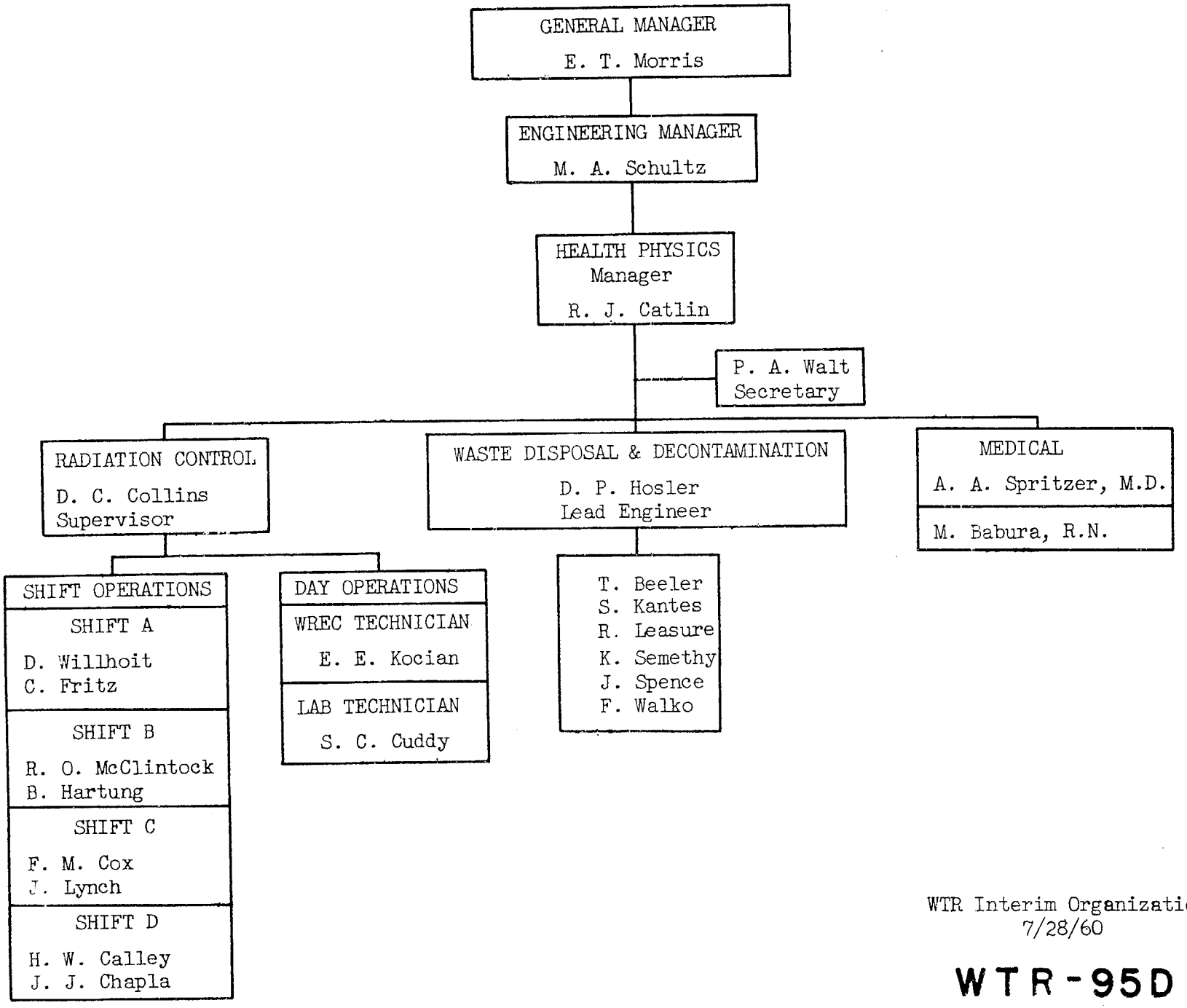

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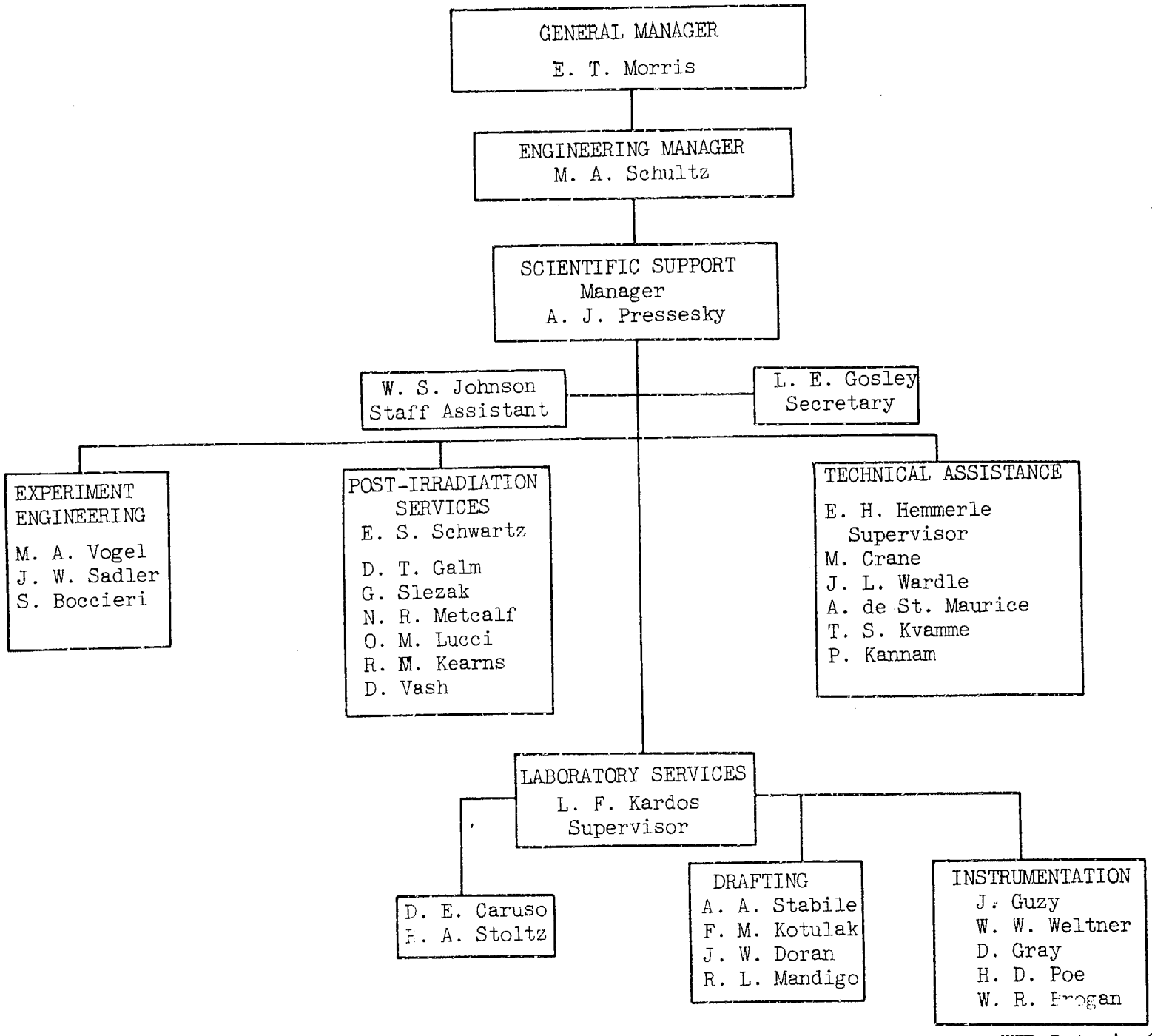

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