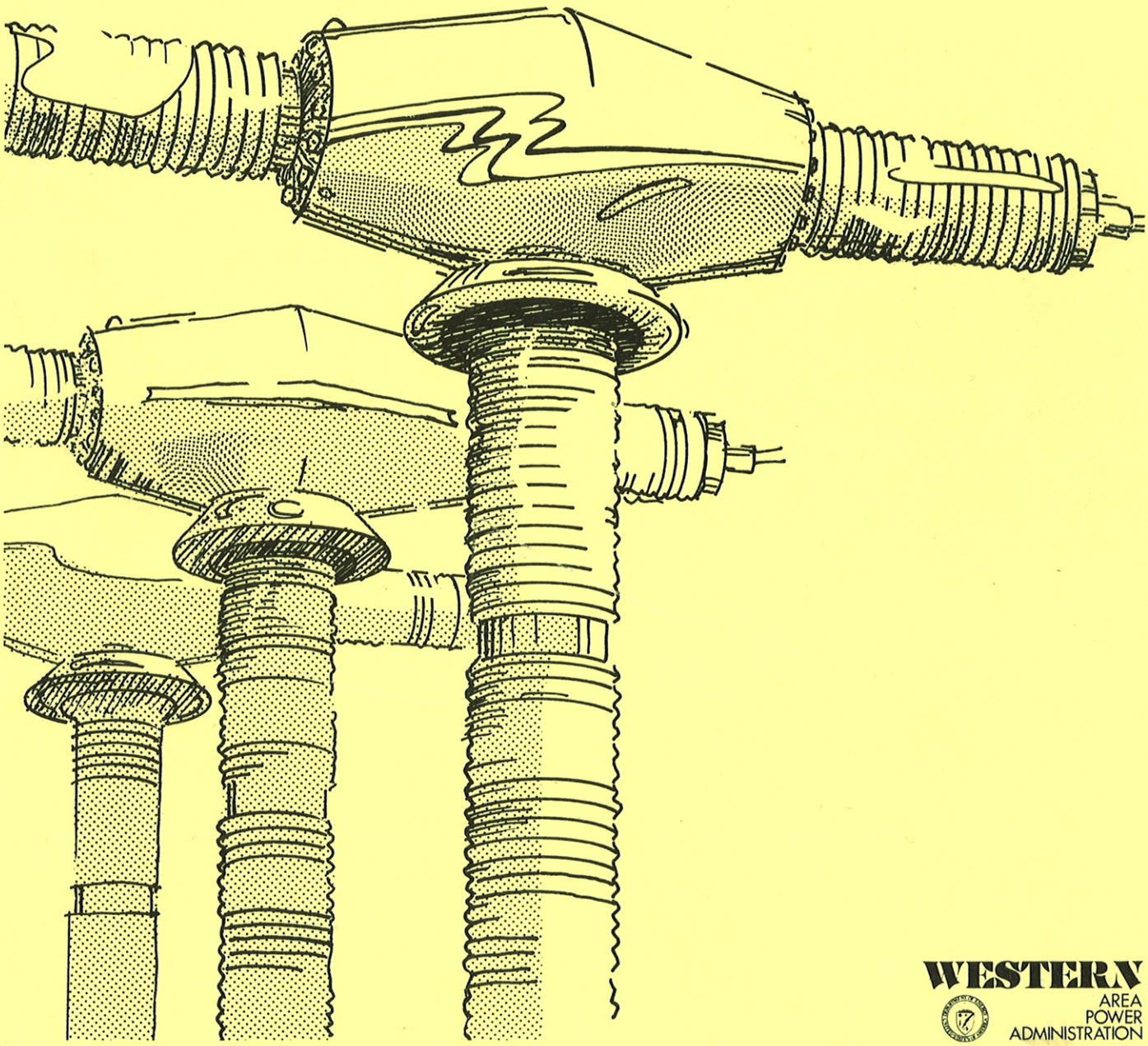
POST-1985 MARKETING PLAN
EASTERN DIVISION
PICK-SLOAN MISSOURI BASIN PROGRAM
BILLINGS AREA
PUBLIC INFORMATION FORUM

MAY 13, 14, 15, 1980 FARGO, SIOUX FALLS, BILLINGS
JUNE 25, 26, 27, 1980 SIOUX FALLS, FARGO, BILLINGS



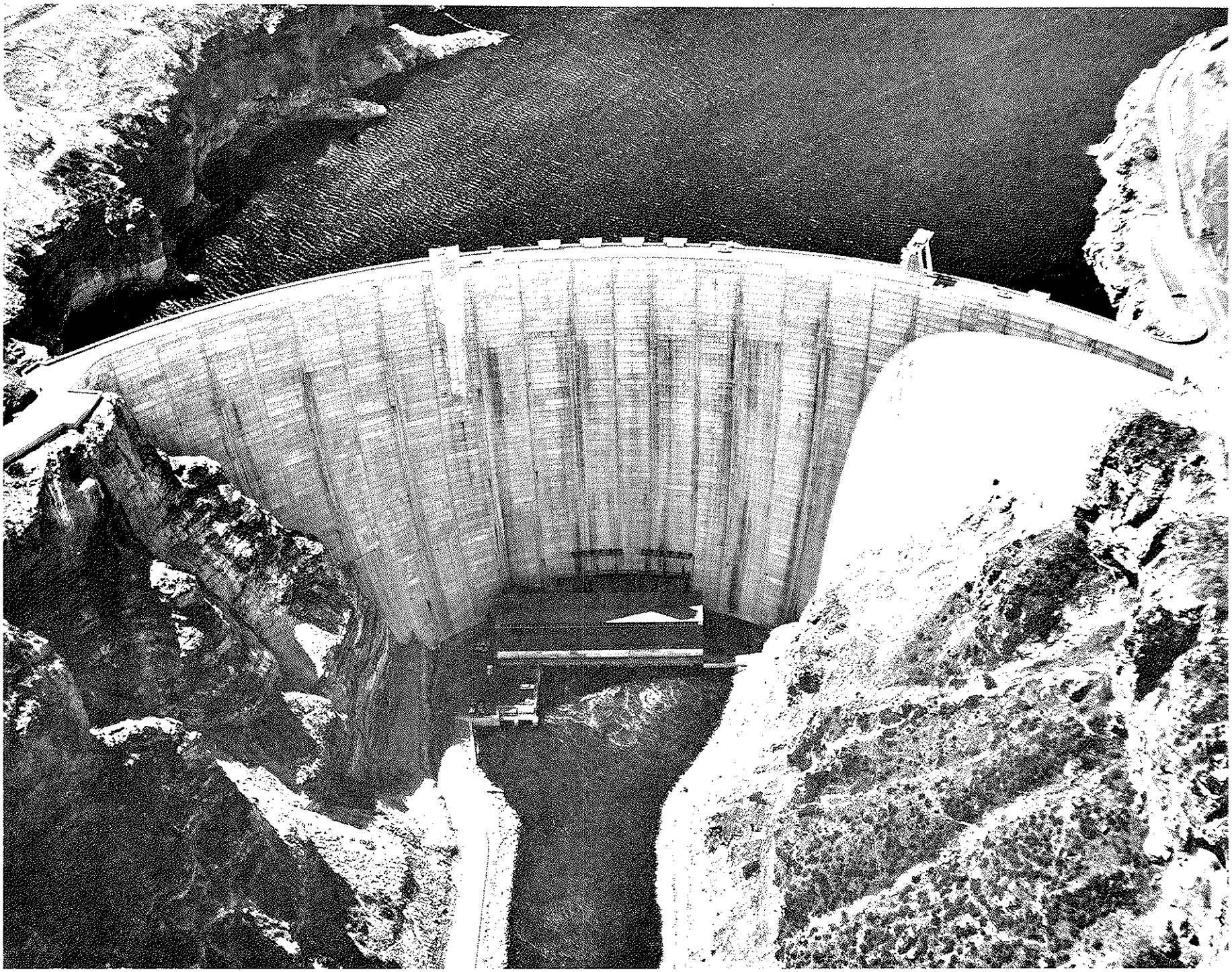
WESTERN
AREA
POWER
ADMINISTRATION

FIGURE 1

YELLOWTAIL DAM

LOCATION	:	Near Fort Smith, Montana, on the Big Horn River
OWNERSHIP	:	Water and Power Resources Service
INSTALLED CAPACITY:		Unit #1 - 62,500 KW Unit #2 - 62,500 KW Unit #3 - 62,500 KW Unit #4 - 62,500 KW
TOTAL INSTALLED CAPACITY	:	250,000 KW
DATE OF INITIAL GENERATION	:	August 1966

FRONTISPIECE



INTRODUCTION

The Western Area Power Administration markets Federal power in a large area of the west from several projects.

The Billings Area of the Western Area Power Administration (Western) markets power from the Eastern Division of the Pick-Sloan Missouri Basin Program (Eastern Division).

The Eastern Division includes 8 powerplants, over 7300 miles of high-voltage transmission lines and 90 substations. The powerplants (located in Montana, North Dakota, and South Dakota) are owned and operated by the Corps of Engineers and the Water and Power Resources Services (formerly the Bureau of Reclamation). Transmission facilities are owned and operated by Western.

The Eastern Division transmission system is located in a 7-state area, including facilities in Missouri that effect an intertie with the Southwestern Power Administration. In the Eastern Division, Western markets power to 230 preference customers in a 6-state area and also delivers power to an irrigation district in Kansas.

Present commitments of commercial firm power (excluding project pumping) in the Eastern Division total 1982 MW in the summer and 1967 MW in the winter. Contractual commitments terminate during the period 1985-1990, with most commitments terminating on December 31, 1985.

This marketing study presents data concerning power marketing for the period after 1985. The report includes 5 basic options, a description of present commitments, a description of existing resources, a description of potential new resources, a presentation of possible post-1985 marketing, and an appendix section containing additional detailed data.

Western announced in January 1979 that it was starting planning of post-1985 marketing. Preliminary public meetings were held in Sioux Falls and Billings in March 1979. Options available to Western were presented, and the opinion of customers and other interested parties was solicited. Many of you have written to Western giving comments on the options discussed.

The marketing study presented at May 1980 meetings still have the options open. New resource data for the period 1980-2000 are now available and are presented in this report.

We urge all customers and other interested parties who have additional or revised comments to make them prior to June 13. Your 1979 comments are on file and under consideration. However, if you wish to comment again, please do so.

The May 1980 meetings are informal public information forums. We are still asking for input. The June meetings will be formal public information forums, and Western will present its proposals for post-1985 marketing. Public Comment forums will be held in late August.

Please direct any comments you have at this time to James D. Davies, Area Manager, Billings Area Office, Western Area Power Administration, P. O. Box EGY, Billings, Montana 59101.

OPTIONS

There are five basic subjects which require decisions prior to establishing final marketing plans. There are several options open on each subject.

The following sheets present the five subjects as "Option Papers". Options are listed and will be discussed. Other options may be available.

Comments are requested on the options available.

OPTION PAPER I

POST-1985 MARKETING PLAN
EASTERN DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM

SUBJECT: MARKETING AREA - EXISTING RESOURCES - EXISTING FACILITIES

DESCRIPTION: THE MARKETING AREA OF THE EASTERN DIVISION IS DESCRIBED AS "MONTANA EAST OF THE CONTINENTAL DIVIDE, ALL OF NORTH AND SOUTH DAKOTA, NEBRASKA EAST OF THE 101° MERIDIAN, IOWA WEST OF THE 94½° MERIDIAN, AND MINNESOTA WEST OF A LINE ON THE 94½° MERIDIAN FROM THE SOUTHERN BOUNDARY OF THE STATE TO THE 46° PARALLEL AND THENCE NORTHWESTERLY TO THE NORTHERN BOUNDARY OF THE STATE AT THE 96½° MERIDIAN". SEE MAP.

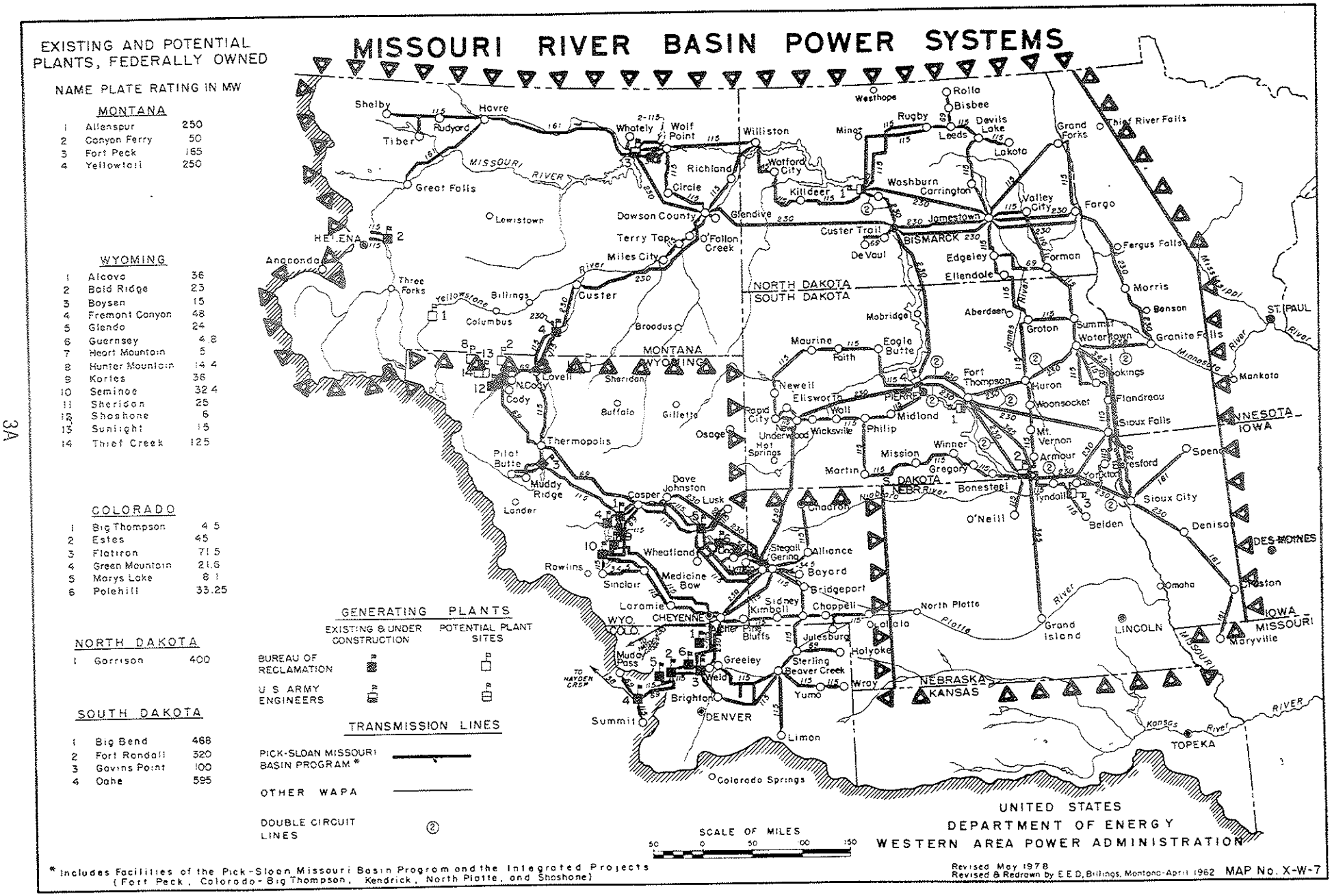
OPTIONS:

1. LEAVE MARKETING AREA THE SAME.

2. EXPAND MARKETING AREA.

3. REDUCE MARKETING AREA.

RECOMMENDATION: DISCUSS OPTIONS AT MAY MEETINGS.


MISSOURI RIVER BASIN POWER SYSTEMS
EXISTING AND POTENTIAL PLANTS, FEDERALLY OWNED
NAME PLATE RATING IN MW
MONTANA
1 Allenspur 250
2 Canyon Ferry 50
3 Fort Peck 165
4 Yellowtail 250
WYOMING
1 Alcova 36
2 Bald Ridge 23
3 Boysen 15
4 Fremont Canyon 48
5 Glendo 24
6 Guernsey 4.8
7 Heart Mountain 5
8 Hunter Mountain 14.4
9 Kortes 36
10 Seminoe 32.4
11 Sheridan 25
12 Shoshone 6
13 Sunlight 15
14 Thief Creek 125
COLORADO
1 Big Thompson 4.5
2 Estes 45
3 Flatiron 71.5
4 Green Mountain 21.6
5 Marys Lake 8.1
6 Polehill 33.25
NORTH DAKOTA
1 Garrison 400
SOUTH DAKOTA
1 Big Bend 468
2 Fort Randall 320
3 Gavins Point 100
4 Oahe 595
GENERATING PLANTS
EXISTING & UNDER CONSTRUCTION
POTENTIAL PLANT SITES
BUREAU OF RECLAMATION
U S ARMY ENGINEERS
TRANSMISSION LINES
PICK-SLOAN MISSOURI BASIN PROGRAM *
OTHER WAPA
DOUBLE CIRCUIT LINES
SCALE OF MILES
UNITED STATES
DEPARTMENT OF ENERGY
WESTERN AREA POWER ADMINISTRATION
* Includes Facilities of the Pick-Sloan Missouri Basin Program and the Integrated Projects (Fort Peck, Colorado-Big Thompson, Kendrick, North Platte, and Shoshone)
Revised May 1978
Revised & Redrawn by E.E.D, Billings, Montana-April 1962 MAP No. X-W-7

OPTION PAPER 1

POST-1985 MARKETING PLAN
EASTERN DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM

SUBJECT: MARKETING AREA - NEW RESOURCES - NEW FACILITIES

DESCRIPTION: FORMAL MARKETING AREA HAS NOT BEEN ESTABLISHED FOR POSSIBLE NEW RESOURCES SUCH AS GREGORY COUNTY PUMPED STORAGE, MANITOBA HYDRO IMPORTS OR OTHER TOTALLY NEW RESOURCES.

OPTIONS:

1. LEAVE MARKETING AREA THE SAME.

2. EXPAND MARKETING AREA.

   A. CONSIDER SERVICE TO EXPANDED AREA ON A CASE BY CASE BASIS. (RESOURCES AND CUSTOMERS.)

   B. CONSIDER SERVICE TO EXPANDED AREA FOR ALL RESOURCES AT NEW FACILITIES AND ALL PREFERENCE ENTITIES.

3. REDUCE MARKETING AREA.

RECOMMENDATION: DISCUSS OPTIONS AT MAY MEETINGS.

OPTION PAPER II

POST-1985 MARKETING PLAN
EASTERN DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM

SUBJECT: TIME PERIOD FOR FUTURE COMMITMENTS. (MOST EXISTING COMMITMENTS TERMINATE IN 1985. OTHERS TERMINATE BETWEEN 1985 AND 1990.)

OPTIONS:

1. CONSIDER THE PERIOD 1986-1995.

   A. ALLOW EXISTING COMMITMENTS TO TERMINATE IN ACCORDANCE WITH CONTRACT TERMS (1985-1990; MOST IN 1985).

   B. MAKE NEW COMMITMENTS IN 1980 FOR THE PERIOD 1986-1995 BASED ON FIRM RESOURCES AVAILABLE IN 1985. ALLOW EXISTING COMMITMENTS NOT TERMINATED IN 1985 TO REMAIN IN EFFECT DURING THE 1985-1995 PERIOD UNTIL THEY TERMINATE.

2. EXTEND ALL EXISTING COMMITMENTS THROUGH DECEMBER 1990. CONSIDER THE PERIOD AFTER 1990 LATER.

3. CONSIDER THE PERIOD 1986-2000.

   A. EXTEND ALL EXISTING COMMITMENTS THROUGH DECEMBER 1990.

   B. MAKE NEW COMMITMENTS IN 1980/1981 FOR THE PERIOD 1991-2000 BASED ON FIRM RESOURCES AVAILABLE IN 2000.

RECOMMENDATION: DISCUSS OPTIONS AT MAY MEETINGS.

OPTION PAPER III

POST-1985 MARKETING PLAN
EASTERN DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM

SUBJECT: CUSTOMERS -- WHO SHOULD RECEIVE NEW COMMITMENTS FROM EXISTING RESOURCES?

OPTIONS:

1. COMMIT FIRM RESOURCES TO EXISTING CUSTOMERS ONLY IN THE SAME PROPORTION AS PRESENT COMMITMENTS.

2. CONSIDER NEW CUSTOMERS WHO MET THE CRITERIA FOR PREFERENCE ENTITIES AS OF JANUARY 1, 1979.

   A. SERVE NEW CUSTOMERS WITH ADDITIONAL CAPACITY DEEMED AVAILABLE FROM NEW ADVERSE CRITERIA. NO REDUCTION OF CAPACITY TO EXISTING CUSTOMERS IN EARLY YEARS.

   B. SERVE NEW CUSTOMERS AT LEVELS OF THE 1964 FIRM POWER ALLOCATION (ESTIMATED TO BE 47-57 MW). WOULD REQUIRE A SLIGHT (1-2 PERCENT) REDUCTION IN COMMITMENTS TO EXISTING CUSTOMERS.

   C. DEFINITION OF NEW CUSTOMERS.

      (1) MEET CRITERIA FOR PREFERENCE ENTITIES AS OF JANUARY 1, 1979.

      (2) LOCATED WITHIN MARKETING AREA DETERMINED UNDER OPTION I.

      (3) DO NOT RECEIVE FIRM FEDERAL HYDROPOWER AT THIS TIME FOR ANY OF SEVERAL REASONS.

OPTION PAPER III (CONT.)

(4) ARE NOT MEMBERS OF A PARENT ORGANIZATION WHO HAS A FIRM POWER CONTRACT.

3. CONSIDER SMALL ADJUSTMENTS TO COMMITMENTS TO EXISTING CUSTOMERS BECAUSE OF PAST INEQUITIES (2-4.4 MW).

RECOMMENDATIONS: DISCUSS OPTIONS AT MAY MEETINGS.

OPTION PAPER IV

POST-1985 MARKETING PLAN
EASTERN DIVISION, PICK-SLOAN MISSOURI BASIN PROGRAM

SUBJECT: MARKETING EXISTING RESOURCES.

OPTIONS:

1. MARKET FIRM POWER WITH ENERGY.

   A. MARKET AT SYSTEM LOAD FACTOR (PRESENT PRACTICE). PURCHASE ENERGY NOT AVAILABLE FROM HYDRO SYSTEM.

   B. MARKET AT LOAD FACTOR THE HYDRO SYSTEM WILL SUPPORT UNDER AVERAGE WATER CONDITIONS. (APPROXIMATELY 60 PERCENT MONTHLY LOAD FACTOR.)

   C. LIMIT LOAD FACTORS TO ENERGY USE THAT WILL ALLOW FOR ASSURED PURCHASES OF ENERGY UNDER AVERAGE WATER CONDITIONS AT OFFPEAK PRICES. HOLD POTENTIAL PURCHASES TO A REASONABLE LEVEL.

   D. OPTION 1A WILL REQUIRE ADJUSTMENT OF THE TIP-UP PORTION OF THE ENERGY CHARGE UNDER FIRM RATE SCHEDULES. OPTION 1C MIGHT REQUIRE SUCH ADJUSTMENT, DEPENDING ON THE ENERGY USE ALLOWED.

   E. LIMIT ENERGY USE TO AMOUNTS LESS THAN CAN BE SUPPORTED BY THE HYDRO SYSTEM. USE RESULTANT SURPLUS ENERGY FOR PURPOSES OTHER THAN LOAD-FACTOR POWER SUCH AS OPTION 2B AND OPTION 3.

OPTION PAPER IV (CONT.)

2. MARKET FIRM PEAKING POWER.

   A. PEAKING POWER WITH NO ENERGY.

   B. PEAKING POWER WITH SMALL AMOUNTS OF ENERGY.

   C. PEAKING POWER ON STRICT PATTERN.

   D. PEAKING POWER ON PREDETERMINED SCHEDULE.

   E. COMBINATIONS.

3. COMBINATIONS OF FIRM AND FIRM PEAKING POWER.

RECOMMENDATION: DISCUSS OPTIONS AT MAY MEETINGS.

OPTION PAPER V

SUBJECT: MARKETING FUTURE RESOURCES.

OPTIONS:

1. MARKET EACH NEW RESOURCE SEPARATELY AS THE PRODUCT AVAILABLE.

2. MARKET NEW RESOURCES AS COMBINED PRODUCTS.

3. MARKET NEW RESOURCES IN COMBINATION WITH EXISTING RESOURCES.

RECOMMENDATION: DISCUSS AT MAY MEETINGS.

COMMITMENTS

A following sheet sets forth the present commitments of the Eastern Division.

There are 147 customers who received a 1977 assignment. At the time of that assignment, commitments to these customers were seasonalized. They total 723 MW in the summer and 663 MW in the winter. There are 83 customers who still have annual contract rates of delivery. These commitments total 967 MW. The contract rate of delivery is available at the time of the customers' system peaks (x/y formula). The commitment in the offpeak season is dependent on customer load patterns which fluctuate. This group of customers include both winter and summer peakers.

At the time of the March 1979 meetings, we stated the seasonalized commitments to these customers with annual contract rates of delivery were 792 MW in the summer and 944 MW in the winter. This was based on 1976 and 1977 patterns. In April 1980, we determined these same commitments total 809 MW in the summer and 929 MW in the winter. The new figures are based on average patterns from 1976 through 1979.

This points up the problem Western has with annual commitments. If they were to continue in the post-1985 period, it would be necessary to reserve a significant amount of capacity to allow for changing seasonal load patterns. Western will seek to establish seasonal commitments for all customers for the period after 1985.

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COMMITMENTS
(TERMINATE 1985-1990)

COMMERCIAL FIRM	SUMMER (MW)	WINTER (MW)
ANNUAL COMMITMENTS	- 967 -	
ANNUAL COMMITMENTS SEASONALIZED	809	929
1977 ASSIGNMENT	723	663
SUMMER FIRM	75	-
SUBTOTAL, COMMERCIAL FIRM WITH ENERGY	1,607	1,592
PEAKING (WITHOUT ENERGY)	375	375
SUBTOTAL, COMMERCIAL FIRM	1,982	1,967
SPECIAL		
PROJECT PUMPING[1/]	109	-
INTERDEPARTMENTAL	-	1
SUBTOTAL	109	1
TOTAL	2,091	1,968

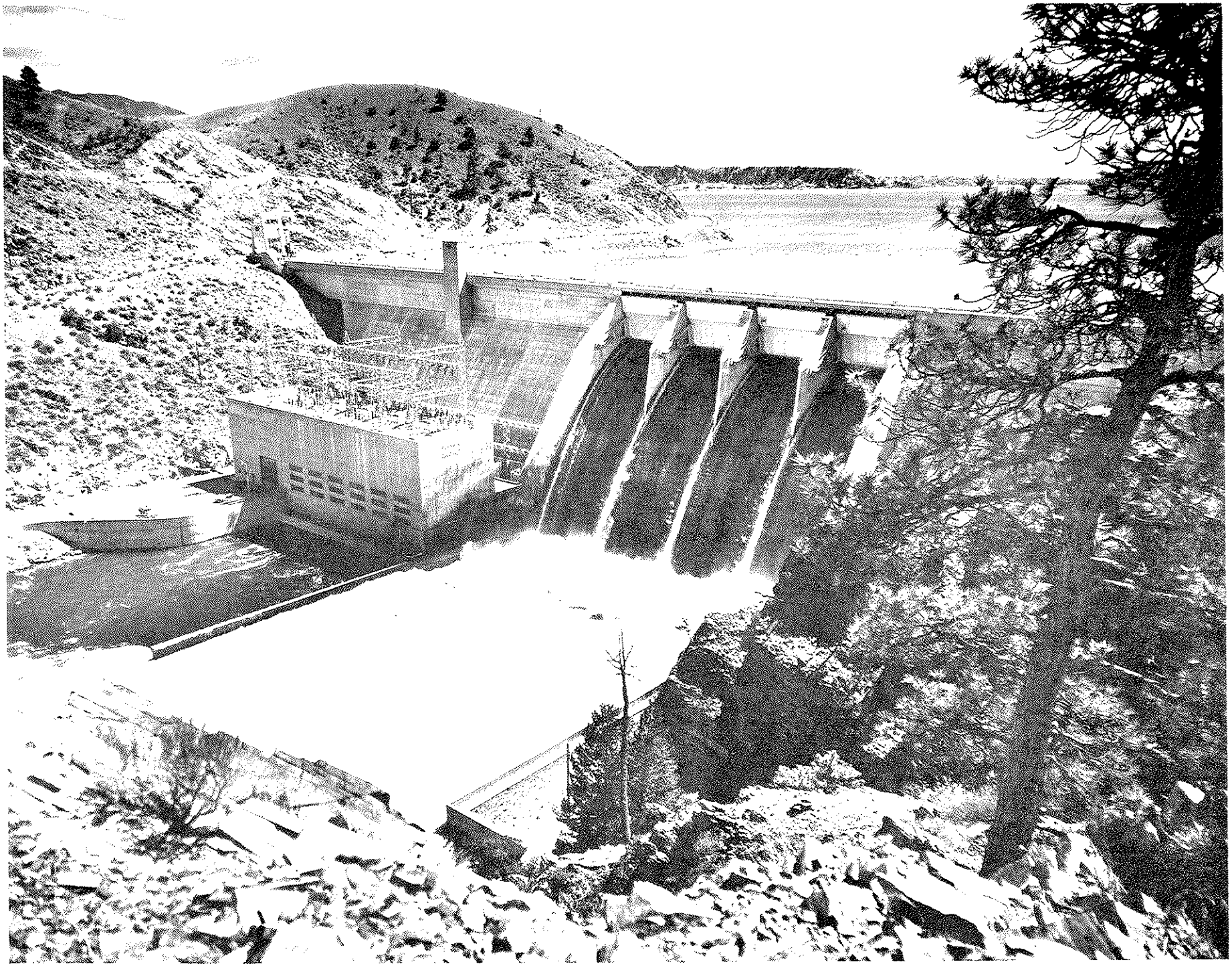
APPROXIMATE NUMBER OF PREFERENCE CUSTOMERS = 230

1/ INCLUDED RESERVATIONS FOR FUTURE PROJECT PUMPING EXPECTED TO BE ON LINE BY 1985.

FIGURE 2

CANYON FERRY DAM

LOCATION	:	Near Helena, Montana, on the Missouri River
OWNERSHIP	:	Water and Power Resources Service
INSTALLED CAPACITY:		Unit #1 - 16,667 KW Unit #2 - 16,667 KW Unit #3 - 16,667 KW
TOTAL INSTALLED CAPACITY	:	50,000 KW
DATE OF INITIAL GENERATION	:	December 1953



RESOURCES

Existing hydro resources include 8 Federal dams and powerplants on the Missouri River and the Big Horn River. These resources are described in considerable detail in the following section.

The Missouri River has an erratic flow. Inflow above Sioux City has varied from a low of 10.6 million acre-feet (MAF) in 1931 to a high of 40.6 MAF in 1978. The average flow for an 82-year period is 24.9 MAF.

Besides the varying water supply which is an unpredictable factor determined by nature, the Missouri River is subject to increasing depletions as water is taken from the river for municpal water supplies, irrigation and industrial development.

In 1979, the Upper Missouri Region of the Water and Power Resources Service (Service) completed a survey of actual 1975 depletions. At the request of Western, the Service also provided a study of depletions for the periods 1980, 1985, 1990, 1995, and 2000. The study was based on current estimates of irrigation development and municipal and industrial use. A moderate amount of industrial use was forecast, and it does not include water that would be used for a large number of synfuel developments.

These new depletion levels were furnished to the Reservoir Control Center, Missouri River Division, U. S. Corps of Engineers (Corps) in December 1979. The Corps conducted a main-stem reservoir regulation study which considered depletion levels in 1975, 1980, 1985, 1990, 1995 and 2000. A computer study, observing all project functions, determined generation for all months during the 82-year period from 1898-1979. Basic studies were completed in March 1980 and additional probability data were furnished in April 1980.

The Service provided new generation data for Canyon Ferry and Yellowtail Powerplants in May 1980.

The most pertinent results of the new generation studies are set forth on following sheets.

In 1953, prior to generation at most powerplants on the Missouri, the Missouri Basin Inter-Agency Committee studied the water supply of the Missouri River. It came to the conclusion that the 12-year drought of the 1930's (1930-1941) was an extremely rare occurrence. It had not been experienced before in recorded history of the Missouri Basin. It has not been experienced since. A statistical analysis of 75 years of precipitation records indicated the chances of recurrence of the 1930-1940 period was about one (1) chance in 3300. The committee advised that most of this period be left out of hydrological data in determining saleable hydropower. Although we are unable to determine a precise probability figure, Western concurs that recurrence of the extremely severe conditions of the 1930s drought is sufficiently remote to allow marketing of hydropower under expected better water conditions.

Prior commitments of firm capability were based on capability available in 1933, the fourth year of the 1930s drought. If one considers the whole period of record, including the whole 1930's drought, this condition could be expected to occur about 10 percent of the time (1 chance in 10). If the period 1934-1942 is eliminated from the record of flows, this water condition or better would be experienced 100 percent of the time.

In 1977, assignments of Additional Firm Power were based on the fifth and sixth year of a lower decile sequence included in the 1976-77 Annual Operating Plan (AOP). Main Stem capability used was 2057 MW in August and 1965 MW in December. These are the critical summer and winter months.

In this May 1980 report, we are suggesting the use of 1961 water conditions for determining adverse-year (firm) capability for post-1985 marketing. This is the eighth year of an 8-year drought period of the 1950s. If the whole period of record is considered, this has a probability of recurrence of about 15% of the time or about 1 chance in 7. If the period 1934-1942 is deleted from the record, the probability of recurrence of 1961 conditions is about 4.1 percent or 1 chance in 25.

The difference in capability between 1961 and 1933 water conditions varies from 62-119 MW, depending on the level of depletions and the time of the year. In other words, if commitments are made based on 1961 conditions and 1933 conditions are experienced in the marketing period, the system could be short about 100 MW.

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SHEET 1

EXISTING RESOURCES
(INSTALLED CAPACITY IN MW)

	PLANT NAME	NO. OF UNITS	INSTALLED CAPACITY
WAPRS PLANTS			
	CANYON FERRY	3	50
	YELLOWTAIL	4	250
SUBTOTAL WAPRS		7	300
USCE PLANTS	FORT PECK	5	185
	GARRISON	5	430
	OAHE	7	595
	BIG BEND	8	468
	FORT RANDALL	8	320
	GAVINS POINT	3	100
SUBTOTAL USCE		36	2098
TOTAL, EASTERN DIVISION		43	2398

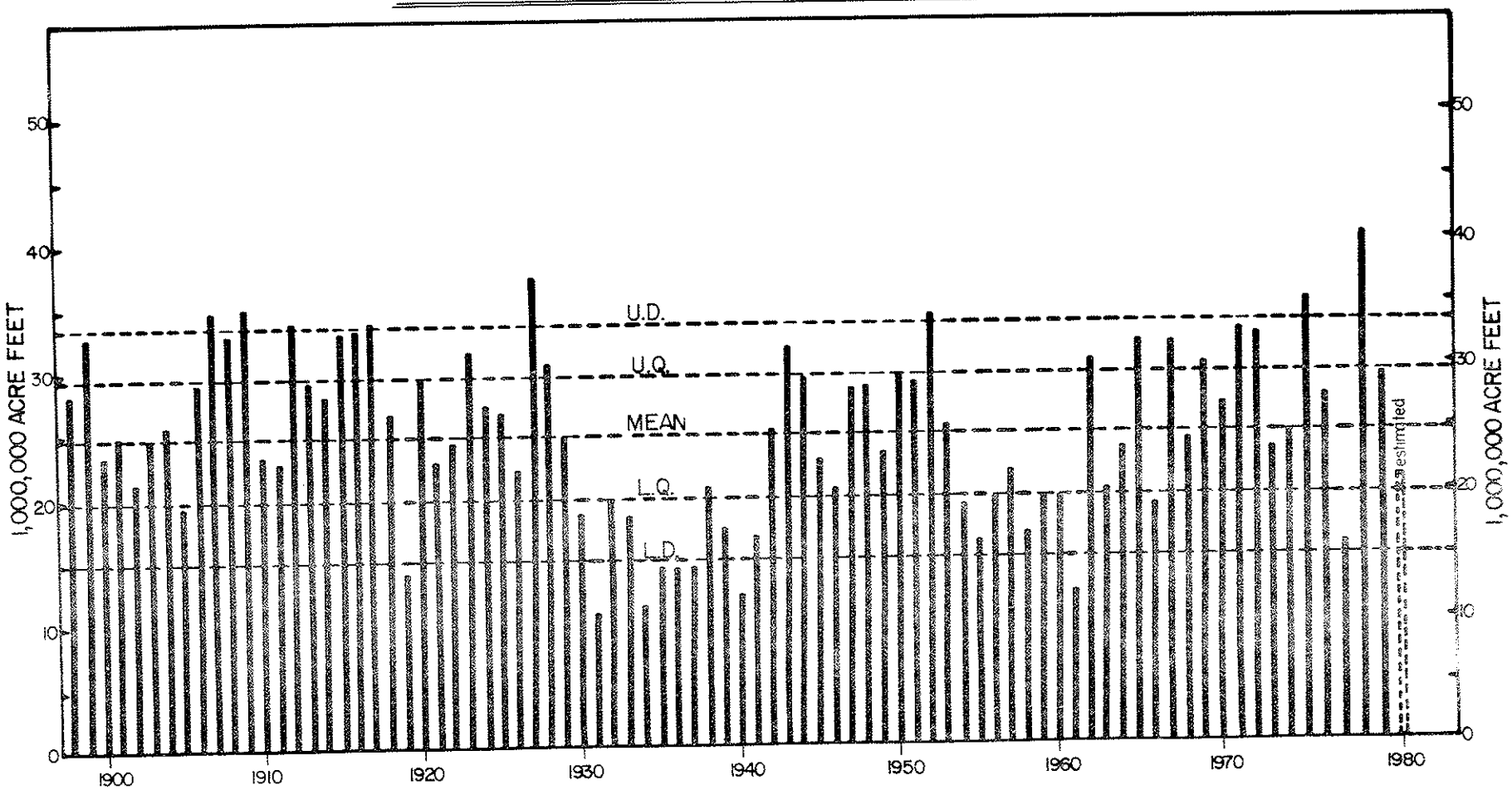
FIGURE 3

FORT PECK DAM

LOCATION	:	Near Fort Peck, Montana, on the Missouri River
OWNERSHIP	:	United States Corps of Engineers
INSTALLED CAPACITY:		Unit #1 - 43,500 KW Unit #2 - 18,000 KW Unit #3 - 43,500 KW Unit #4 - 40,000 KW Unit #5 - 40,000 KW
TOTAL INSTALLED CAPACITY	:	185,000 KW
DATE OF INITIAL GENERATION	:	July 1943

APRIL, 1980

ANNUAL WATER SUPPLY
MISSOURI RIVER AT SIOUX CITY



FROM U.S. CORPS OF ENGINEERS — MISSOURI RIVER DIVISION

SUMMARY

HISTORICAL WATER SUPPLY
MISSOURI RIVER AT SIOUX CITY*
1898-1979 IN MILLIONS OF ACRE FEET (MAF)

HIGHEST FLOW OF RECORD	40.6 MAF	1978
SECOND HIGHEST FLOW OF RECORD	37.0 MAF	1927
THIRD HIGHEST FLOW OF RECORD	35.4 MAF	1975
MEAN FLOW FOR PERIOD	24.9 MAF	--
LOWEST FLOW OF RECORD	10.6 MAF	1931
SECOND LOWEST FLOW OF RECORD	11.1 MAF	1934
THIRD LOWEST FLOW OF RECORD	12.0 MAF	1940
FOURTH LOWEST FLOW OF RECORD	12.5 MAF	1961

WATER CONDITIONS	DEFINITION	WATER SUPPLY
UPPER DECILE	1 CHANCE IN 10 TO BE EQUAL OR HIGHER	33.2 MAF
UPPER QUARTILE	1 CHANCE IN 4 TO BE EQUAL OR HIGHER	29.8 MAF
MEAN	AVERAGE	24.9 MAF
LOWER QUARTILE	1 CHANCE IN 4 TO BE EQUAL OR LOWER	19.9 MAF
LOWER DECILE	1 CHANCE IN 10 TO BE EQUAL OR LOWER	15.0 MAF

DISTRIBUTION OF WATER CONDITIONS

WATER CONDITIONS	NO. OF YEARS EXPERIENCED	PERCENT OF TIME
UPPER DECILE OR BETTER	8	9.8
UPPER QUARTILE TO UPPER DECILE	13	15.9
MEAN TO UPPER QUARTILE	20	24.4
MEAN TO LOWER QUARTILE	20	24.4
LOWER QUARTILE TO LOWER DECILE	13	15.9
LOWER DECILE OR WORSE	8 1/	9.8
TOTAL	82	100.2

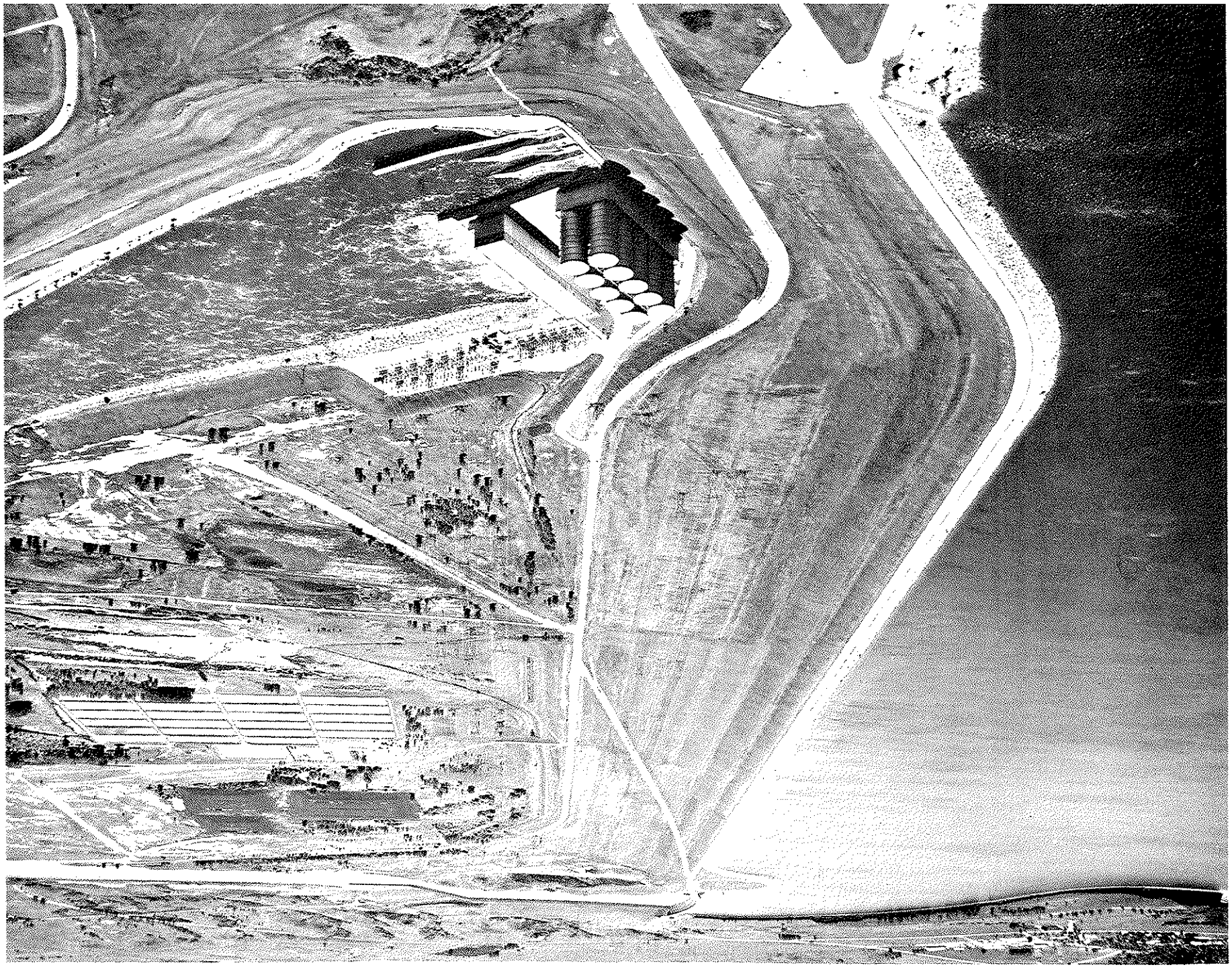
*ADJUSTED TO 1949 LEVEL OF DEVELOPMENT -- FROM MISSOURI RIVER DIVISION - U. S. CORPS OF ENGINEERS

1/ SIX YEARS IN THE 1930'S DROUGHT

FIGURE 4

GARRISON DAM

LOCATION	:	Near Riverdale, North Dakota, on the Missouri River
OWNERSHIP	:	United States Corps of Engineers
INSTALLED CAPACITY:		Unit #1 - 80,000 KW Unit #2 - 80,000 KW Unit #3 - 80,000 KW Unit #4 - 95,000 KW Unit #5 - 95,000 KW
TOTAL INSTALLED CAPACITY	:	430,000 KW
DATE OF INITIAL GENERATION	:	January 1956



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SHEET 1 OF 1

SUMMARY
MAIN STEM PEAKING CAPABILITY
(MEGAWATTS)

DEPLETION LEVEL	MONTH	1937	1933	1961	1959
1975	AUG.	1597	2022	2123	2173
	DEC.	1602	1940	2052	2135
1980	AUG.	1540	2002	2101	2145
	DEC.	1597	1929	2026	2110
1985	AUG.	1539	1979	2077	2138
	DEC.	1616	1912	1998	2096
1990	AUG.	1535	1951	2070	2115
	DEC.	1611	1924	2011	2070
1995	AUG.	1576	1919	2034	2089
	DEC.	1655	1920	2003	2043
2000	AUG.	1704	1876	1959	2045
	DEC.	1739	1922	1984	1995

1937 WAS LOWEST YEAR OF RECORD.
1933 WAS FOURTH YEAR OF 12-YEAR DROUGHT OF 1930'S.
1961 WAS LOWEST YEAR OF 8-YEAR DROUGHT OF 1950'S.
1933 HAS 1 CHANCE IN 10 OF RECURRING, CONSIDERING THE 82 YEARS OF RECORD.

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APRIL 1980

SUMMARY
MAIN STEM ANNUAL GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	AVG. ANNUAL GENERATION 1898-1979	APPROX. MEDIAN ANNUAL GENERATION 1898-1979	AVG. ANNUAL GENERATION 1898-1933, 1943-1979 1/
1975	9860	10,000	10,408
1980	9772	9,930	10,333
1985	9632	9,840	10,194
1990	9447	9,580	10,008
1995	9166	9,396	9,734
2000	8880	9,190	9,436

1/ EXCLUDES 1934-1942

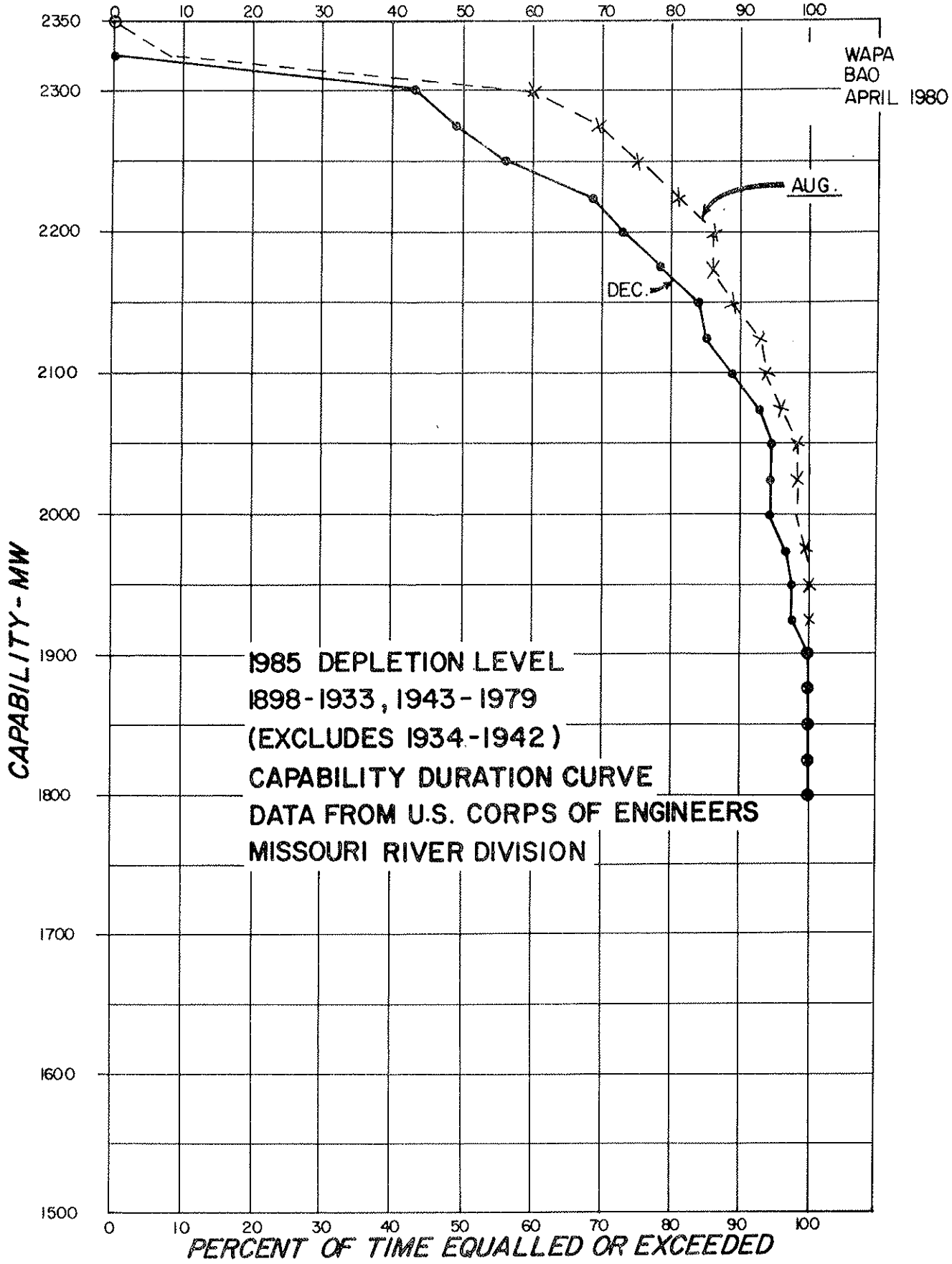
MAIN STEM
PEAKING CAPABILITY

1898-1933, 1943-1979 (Excludes 1934-1942)

1985 DEPLETION LEVEL

YEAR	AUG. (MW)	DEC. (MW)	FOLLOWING JANUARY (MW)	PERCENT OF TIME 1/ EQUALLED OR EXCEEDED (%)
1933	1979	1912	1929	100.0
1931	2057	1967	1988	98.6
1932	2074	1978	1993	97.3
1961	2077	1998	2024	95.9
1956	2110	2054	2067	94.5
1958	2133	2075	2089	93.2
1957	2143	2095	2104	91.8
1959	2138	2096	2105	90.4
1955	2164	2101	2112	89.0

1/ Percents Based on Capabilities in December.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APRIL 1980
AUG.
DEC.
1985 DEPLETION LEVEL
1898-1933, 1943-1979
(EXCLUDES 1934-1942)
CAPABILITY DURATION CURVE
DATA FROM U.S. CORPS OF ENGINEERS
MISSOURI RIVER DIVISION
CAPABILITY - MW
PERCENT OF TIME EQUALLED OR EXCEEDED
2350
2300
2200
2100
2000
1900
1800
1700
1600
1500
0
10
20
30
40
50
60
70
80
90
100

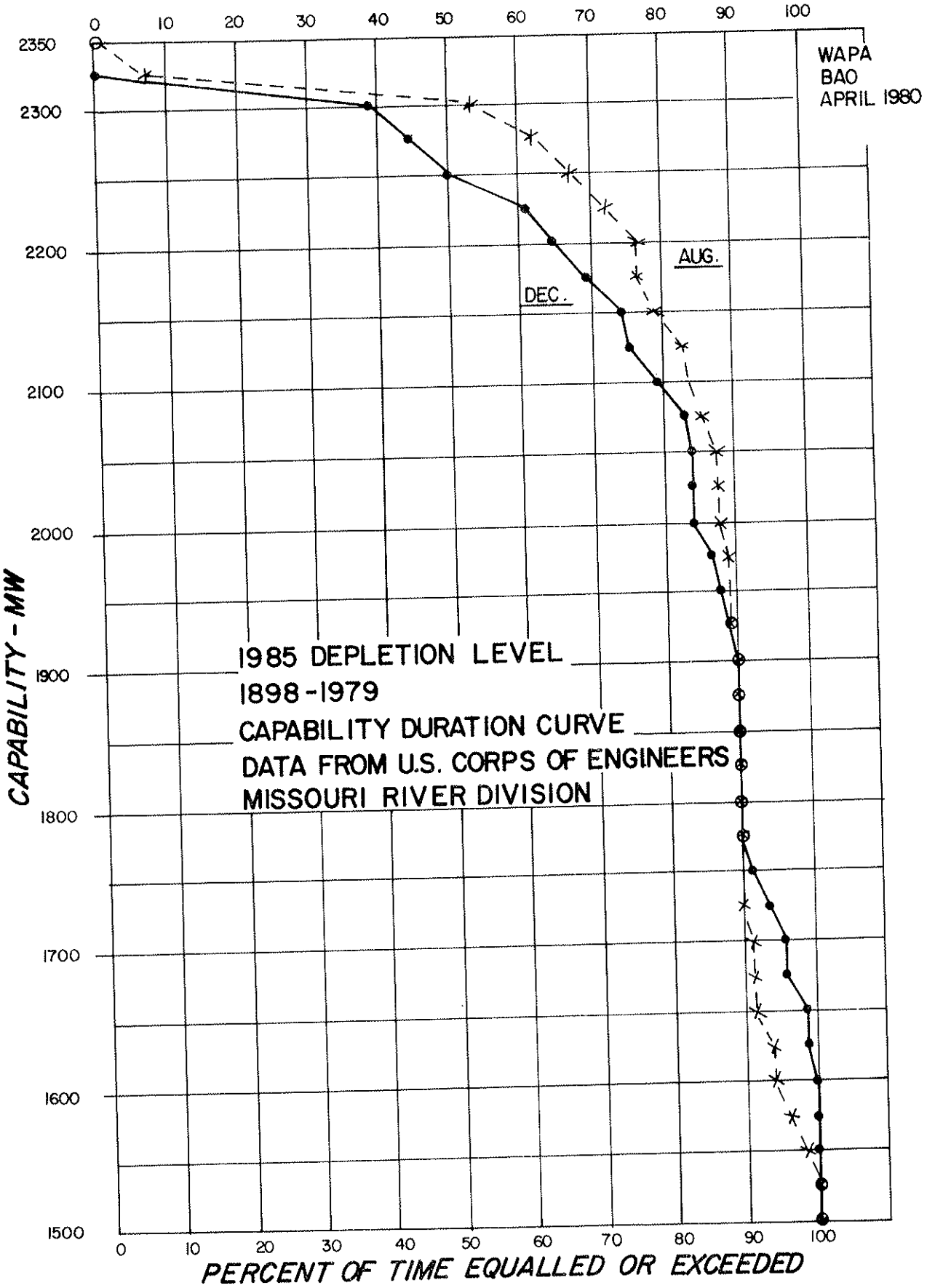
MAIN STEM
PEAKING CAPABILITY

1898-1979 (82 Years)

1985 DEPLETION LEVEL

YEAR	AUG. (MW)	DEC. (MW)	FOLLOWING JANUARY (MW)	PERCENT OF TIME 1/ EQUALLED OR EXCEEDED (%)
1937	1539	1616	1616	100.0
1936	1577	1653	1651	98.8
1940	1567	1662	1664	97.6
1938	1616	1708	1716	96.3
1935	1643	1720	1720	95.1
1941	1562	1725	1724	93.9
1934	1709	1742	1743	92.7
1939	1646	1752	1755	91.5
1933	1979	1912	1929	90.2
1942	1919	1947	1958	89.0
1931	2057	1967	1988	87.8
1932	2074	1978	1993	86.6
1961	2077	1998	2024	85.4
1956	2110	2054	2067	84.1
1958	2133	2075	2089	82.9
1957	2143	2095	2104	81.7
1959	2138	2096	2105	80.5
1955	2164	2101	2112	79.3

1/ Percents Based on Capabilities in December.


WAPA
BAO
APRIL 1980
AUG.
DEC.
1985 DEPLETION LEVEL
1898-1979
CAPABILITY DURATION CURVE
DATA FROM U.S. CORPS OF ENGINEERS
MISSOURI RIVER DIVISION
CAPABILITY - MW
PERCENT OF TIME EQUALLED OR EXCEEDED
2350
2300
2200
2100
2000
1900
1800
1700
1600
1500
0
10
20
30
40
50
60
70
80
90
100

MAIN STEM
AVERAGE ANNUAL ENERGY GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	TOTAL PERIOD (1898-1979)	EXCLUDING 1934-1942 (1898-1933,1943-1979)	DIFFERENCE (Col 3-Col 2)	PERCENT INCREASE (%)
1975	9860	10,408	548	5.6
1980	9772	10,333	561	5.7
1985	9632	10,194	562	5.8
1990	9447	10,008	561	5.9
1995	9166	9,734	568	6.2
2000	8880	9,436	556	6.3

1. Total Period Includes the 1930s Drought
2. Next Column Excludes 9 Years of the 1930s Drought
3. Differences Range from 548 to 568 GWH, or About 6 Percent.

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MAIN STEM
AVERAGE SUMMER ENERGY GENERATION
JUNE-SEPTEMBER
(MILLIONS OF KWH)

DEPLETION LEVEL	1898-1979	1898-1933, 1943-1979[1/]	DIFFERENCE	PERCENT INCREASE
1975	3699.5	3889.8	190.3	5.1
1980	3670.4	3868.3	197.9	5.4
1985	3599.9	3808.4	208.5	5.8
1990	3525.4	3732.4	207.0	5.9
1995	3433.8	3655.7	221.9	6.5
2000	3316.0	3532.1	216.1	6.5

1/ EXCLUDES 1934-1942

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MAIN STEM
AVERAGE WINTER ENERGY GENERATION
DECEMBER-FEBRUARY
(MILLIONS OF KWH)

DEPLETION LEVEL	1898-1979	1898-1933, 1943-1979[1/]	DIFFERENCE	PERCENT INCREASE
1975	2188.3	2345.4	157.1	7.2
1980	2149.5	2308.1	158.6	7.4
1985	2119.6	2266.3	146.7	6.9
1990	2068.3	2211.2	142.9	6.9
1995	1977.3	2174.8	197.5	7.0
2000	1912.0	2044.2	132.2	6.9

1/ EXCLUDES 1934-1942

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APRIL 1980

MAIN STEM
AVERAGE AUGUST ENERGY GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	1898-1979	1898-1933, 1943-1979[1/]	DIFFERENCE	PERCENT INCREASE
1975	1012.3	1069.8	57.5	5.7
1980	1012.6	1068.6	56.0	5.5
1985	1005.4	1065.5	60.1	6.0
1990	979.5	1046.3	66.8	6.8
1995	931.8	1009.7	77.9	8.4
2000	897.2	973.7	76.5	8.5

1/ EXCLUDES 1934-1942

WAPA
BAO
APRIL 1980

MAIN STEM
AVERAGE DECEMBER ENERGY GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	1898-1979	1898-1933, 1943-1979 1/	DIFFERENCE	PERCENT INCREASE
1975	814.9	866.8	51.9	6.4
1980	799.6	853.0	53.4	6.7
1985	788.4	834.8	46.4	5.9
1990	768.3	814.2	45.9	6.0
1995	729.3	774.2	44.9	6.2
2000	705.6	749.3	43.7	6.2

1/ EXCLUDES 1934-1942

FIGURE 5

OAHE DAM

LOCATION	:	Near Pierre, South Dakota, on the Missouri River
OWNERSHIP	:	United States Corps of Engineers
INSTALLED CAPACITY:		Unit #1 - 85,000 KW Unit #2 - 85,000 KW Unit #3 - 85,000 KW Unit #4 - 85,000 KW Unit #5 - 85,000 KW Unit #6 - 85,000 KW Unit #7 - 85,000 KW
TOTAL INSTALLED CAPACITY	:	595,000 KW
DATE OF INITIAL GENERATION	:	April 1962

SUMMARY - FOURTH YEAR OF
LOWER DECILE SEQUENCES
(From Main Stem Annual Operating Plans)

	AUGUST CAPACITY (MW)	DECEMBER CAPACITY (MW)	JANUARY CAPACITY (MW)	STORAGE AT START OF AOP (MAF)	ESTIMATED INFLOW DURING YEAR (MAF)
1975-76 AOP (3/79 - 2/80)	2097	1993	2013	71.9	18.0
1976-77 AOP (3/80 - 2/81)	2103	1990	2022	65.8	18.0
1977-78 AOP (3/81 - 2/82)	2062	1949	1986	57.1	18.0
1978-79 AOP (3/82 - 2/83)	2148	2023	2066	69.1	18.0
1979-80 AOP (3/83 - 2/84)	2164	2042	2079	66.9	18.0
HIGH YEAR	2164	2042	2079	66.9	18.0
LOW YEAR	2062	1949	1986	57.1	18.0
DIFFERENCE	102	93	93	9.8	--
USED IN 1977 COMMITMENTS	2057	1965		-	-
1933 WATER CONDITIONS 1/	1979	1912	1929(1934)		

1/ USING 1985 ESTIMATED DEPLETIONS FROM DECEMBER 1979 STUDIES

SUMMARY - FIFTH YEAR OF
LOWER DECILE SEQUENCES
(From Main Stem Annual Operating Plans)

	AUGUST CAPACITY (MW)	DECEMBER CAPACITY (MW)	JANUARY CAPACITY (MW)	STORAGE AT START OF AOP (MAF)	ESTIMATED INFLOW DURING YEAR (MAF)
1975-76 AOP (3/80 - 2/81)	2078	1965	1994	71.9	18.0
1976-77 AOP (3/81 - 2/82)	2077	1959	1994	65.8	18.0
1977-78 AOP (3/82 - 2/83)	2044	1929	1965	57.1	18.0
1978-79 AOP (3/83 - 2/84)	2129	1997	2045	69.1	18.0
1979-80 AOP (3/84 - 2/85)	2149	2019	2062	66.9	18.0
HIGH YEAR	2149	2019	2062	66.9	18.0
LOW YEAR	2044	1929	1965	57.1	18.0
DIFFERENCE	105	90	97	9.8	--
USED IN 1977 COMMITMENTS	2057	1965	--	--	--
1933 WATER CONDITIONS 1/	1979	1912	1929(1934)	--	--

1/ USING 1985 ESTIMATED DEPLETIONS FROM DECEMBER 1979 STUDIES

SUMMARY - SIXTH YEAR OF LOWER DECILE SEQUENCES

(From Main Stem Annual Operating Plans)

	AUGUST CAPACITY (MW)	DECEMBER CAPACITY (MW)	JANUARY CAPACITY (MW)	STORAGE AT START OF AOP (MAF)	ESTIMATED INFLOW DURING YEAR (MAF)
1975-76 AOP (3/81 - 2/82)	2057	1943	1974	71.9	18.0
1976-77 AOP (3/82 - 2/83)	2051	1933	1967	65.8	18.0
1977-78 AOP (3/83 - 2/84)	2025	1908	1945	57.1	18.0
1978-79 AOP (3/84 - 2/85)	2109	1978	2024	69.1	18.0
1979-80 AOP (3/85 - 2/86)	2131	1997	2044	66.9	18.0
HIGH YEAR	2131	1997	2044	66.9	18.0
LOW YEAR	2025	1908	1945	57.1	18.0
DIFFERENCE	106	89	99	9.8	--
USED IN 1977 COMMITMENTS	2057	1965	--	--	--
1933 WATER CONDITIONS 1/	1979	1912	1929(1934)	--	--

1/ USING 1985 ESTIMATED DEPLETIONS FROM DECEMBER 1979 STUDIES

FIGURE 6

BIG BEND DAM

LOCATION	:	Near Fort Thompson, South Dakota, on the Missouri River
OWNESHIP	:	United States Corps of Engineers
INSTALLED CAPACITY:		Unit #1 - 58,500 KW Unit #2 - 58,500 KW Unit #3 - 58,500 KW Unit #4 - 58,500 KW Unit #5 - 58,500 KW Unit #6 - 58,500 KW Unit #7 - 58,500 KW Unit #8 - 58,500 KW
TOTAL INSTALLED CAPACITY	:	468,000 KW
DATE OF INITIAL GENERATION	:	October 1964

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SHEET 1

SUMMARY
CANYON FERRY AND YELLOWTAIL CAPABILITY
(MEGAWATTS - LOWER DECILE CONDITIONS)

DEPLETION LEVEL	AUGUST	DECEMBER
1980 CANYON FERRY	58	58
YELLOWTAIL 1/	278	274
TOTAL	336	332
1985 CANYON FERRY	58	58
YELLOWTAIL 1/	271	274
TOTAL	329	332
1990 CANYON FERRY	58	58
YELLOWTAIL 1/	270	274
TOTAL	328	332
1995 CANYON FERRY	58	58
YELLOWTAIL	269	274
TOTAL	327	332
2000 CANYON FERRY	58	58
YELLOWTAIL 1/	268	274
TOTAL	326	332

1/ TOTAL YELLOWTAIL - ONLY 1/2 OF YELLOWTAIL WILL BE MARKETED BY THE EASTERN DIVISION.

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APRIL 1980
SHEET 1

SUMMARY
CANYON FERRY AND YELLOWTAIL ANNUAL GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	MEDIAN ANNUAL GENERATION
1980 CANYON FERRY	445
YELLOWTAIL 1/	1061
TOTAL	1506
1985 CANYON FERRY	435
YELLOWTAIL 1/	921
TOTAL	1356
1990 CANYON FERRY	435
YELLOWTAIL 1/	906
	1341
1995 CANYON FERRY	435
YELLOWTAIL 1/	890
	1325
2000 CANYON FERRY	435
YELLOWTAIL 1/	874
	1309

1/ TOTAL YELLOWTAIL -- ONLY 1/2 OF YELLOWTAIL WILL BE MARKETED BY THE EASTERN DIVISION

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SHEET 1

CANYON FERRY AND YELLOWTAIL GENERATION
(MILLIONS OF KWH)

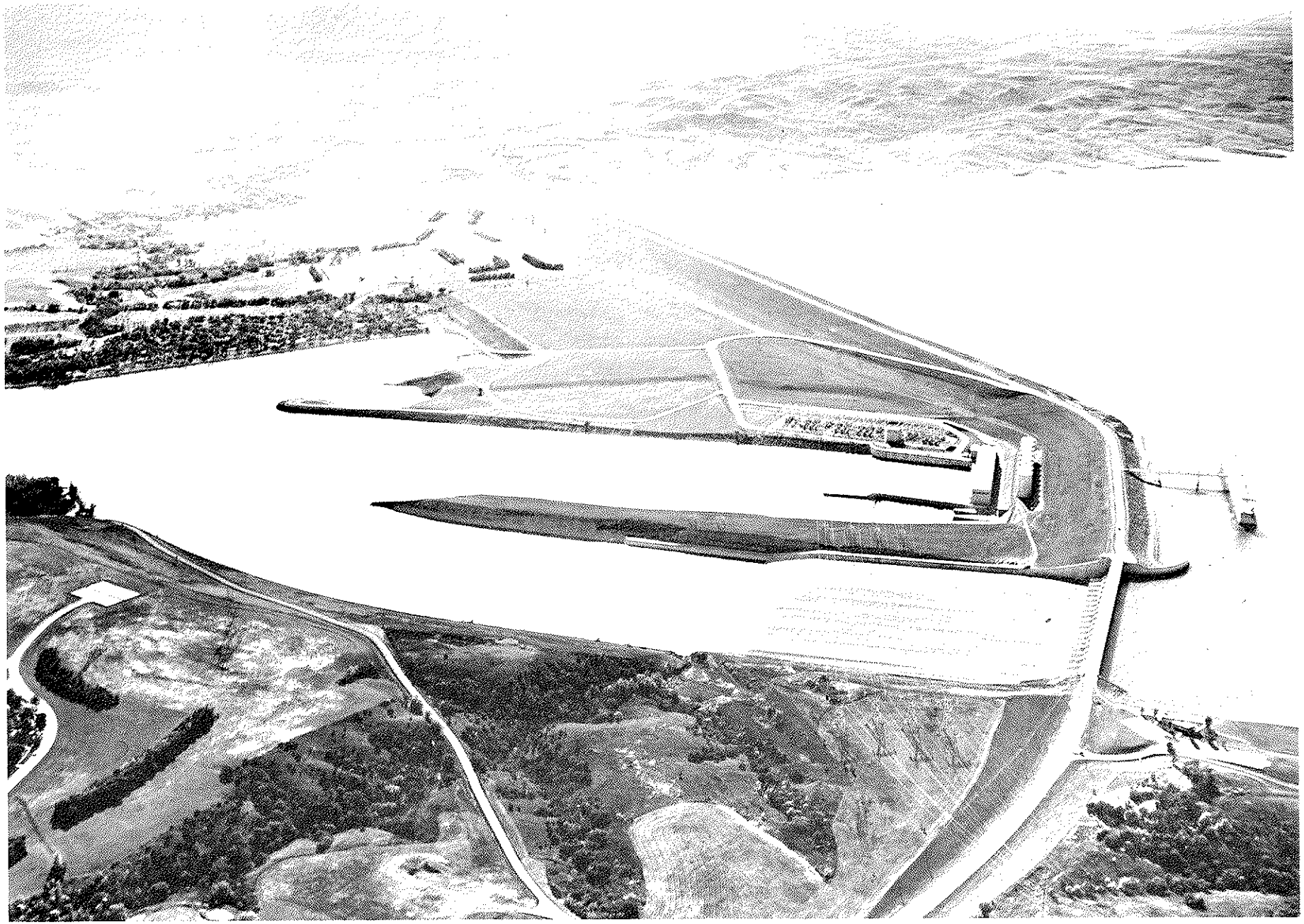
DEPLETION LEVEL	MEDIAN-YEAR WATER CONDITIONS			
	SUMMER (JUNE-SEPT)	WINTER (DEC-FEB)	AUGUST	DECEMBER
1980				
CANYON FERRY	151.9	109.6	36.8	34.9
YELLOWTAIL 1/	383.5	268.4	82.8	91.2
TOTAL	535.4	378.0	119.6	126.1
1985				
CANYON FERRY	163.2	100.9	40.3	32.4
YELLOWTAIL 1/	282.1	266.0	64.6	90.3
TOTAL	445.3	366.9	104.9	122.7
1990				
CANYON FERRY	163.2	100.9	40.3	32.4
YELLOWTAIL 1/	274.4	264.0	63.0	89.6
TOTAL	437.6	364.9	103.3	122.0
1995				
CANYON FERRY	163.2	100.9	40.3	32.4
YELLOWTAIL 1/	266.6	262.0	61.3	89.0
TOTAL	429.8	362.9	101.6	121.4
2000				
CANYON FERRY	163.2	100.9	40.3	32.4
YELLOWTAIL 1/	258.7	260.0	59.7	88.3
TOTAL	421.9	360.9	100.0	120.7

1/ TOTAL YELLOWTAIL - ONLY 1/2 OF YELLOWTAIL WILL BE MARKETED BY THE EASTERN DIVISION.

FIGURE 7

FORT RANDALL DAM

LOCATION	:	Near Pickstown, South Dakota, on the Missouri River
OWNERSHIP	:	United States Corps of Engineers
INSTALLED CAPACITY:		Unit #1 - 40,000 KW Unit #2 - 40,000 KW Unit #3 - 40,000 KW Unit #4 - 40,000 KW Unit #5 - 40,000 KW Unit #6 - 40,000 KW Unit #7 - 40,000 KW Unit #8 - 40,000 KW
TOTAL INSTALLED CAPACITY	:	320,000 KW
DATE OF INITIAL GENERATION	:	March 1954



WAPA
BAO
APRIL 1980
SHEET 1

SUMMARY
AT-PLANT GROSS CAPABILITY
(MEGAWATTS)

DEPLETION LEVEL	1933 1/ AUGUST	1933 1/ DECEMBER	1961 2/ AUGUST	1961 2/ DECEMBER
1980 MAINSTEM	2002	1929	2101	2026
C.F. & 1/2 YELL. 3/	198	198	198	198
TOTAL	2200	2127	2299	2224
1985 MAINSTEM	1979	1912	2077	1998
C.F. & 1/2 YELL. 3/	198	198	198	198
TOTAL	2177	2110	2275	2196
1990 MAINSTEM	1951	1924	2070	2011
C.F. & 1/2 YELL. 3/	198	198	198	198
TOTAL	2149	2122	2268	2209
1995 MAINSTEM	1919	1920	2034	2003
C.F. & 1/2 YELL. 3/	198	198	198	198
TOTAL	2117	2118	2232	2201
2000 MAINSTEM	1876	1922	1959	1984
C.F. & 1/2 YELL. 3/	198	198	198	198
TOTAL	2074	2120	2157	2182

1/ 1933 WATER CONDITIONS FOR MAIN STEM PLANTS-LOWER DECILE WATER CONDITIONS FOR CANYON FERRY AND YELLOWTAIL.

2/ 1961 WATER CONDITIONS FOR MAIN-STEM PLANTS - LOWER DECILE WATER CONDITIONS FOR CANYON FERRY AND YELLOWTAIL.

3/ 1/2 OF YELLOWTAIL CAPABILITY SHOWN AS 140 MW.

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APRIL 1980

SUMMARY
AT-PLANT GROSS ANNUAL GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	APPROXIMATE MEDIAN ANNUAL GENERATION
1980	
MAINSTEM	9,930
C.F. & ½YELL.	976
TOTAL	10,906
1985	
MAINSTEM	9,840
C.F. & ½ YELL.	896
TOTAL	10,736
1990	
MAINSTEM	9,580
C.F. & ½ YELL.	888
TOTAL	10,468
1995	
MAINSTEM	9,396
C.F. & ½ YELL.	880
TOTAL	10,276
2000	
MAINSTEM	9,190
C.F. & ½ YELL.	872
TOTAL	10,062

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APRIL 1980

SUMMARY
AT-PLANT GROSS GENERATION
(MILLIONS OF KWH)

DEPLETION LEVEL	APPROXIMATE MEDIAN-YEAR WATER CONDITIONS			
	SUMMER (JUNE-SEPT)	WINTER (DEC-FEB)	AUGUST	DECEMBER
1980				
MAINSTEM 1/	3729.1	2183.9	1028.8	812.4
C.F. & ½ YELL.	343.7	243.8	78.2	80.5
TOTAL	4072.8	2427.7	1107.0	892.9
1985				
MAINSTEM 1/	3657.5	2153.5	1021.5	801.0
C.F. & ½ YELL.	304.3	233.9	72.6	77.6
TOTAL	3961.8	2387.4	1094.1	878.6
1990				
MAINSTEM 1/	3581.8	2101.4	995.2	780.6
C.F. & ½ YELL.	300.4	232.9	71.8	77.2
TOTAL	3882.2	2334.3	1067.0	857.8
1995				
MAINSTEM 1/	3488.7	2008.9	946.7	741.0
C.F. & ½ YELL.	296.5	231.9	71.0	76.9
TOTAL	3785.2	2240.8	1017.7	817.9
2000				
MAINSTEM 1/	3369.1	1942.6	911.6	716.9
C.F. & ½ YELL.	292.6	230.9	70.2	76.6
TOTAL	3661.7	2173.5	981.8	793.5

1/ 1.016 X AVERAGE GENERATION

FIGURE 8

GAVINS POINT DAM

LOCATION	:	Near Yankton, South Dakota, on the Missouri River
OWNERSHIP	:	United States Corps of Engineers
INSTALLED CAPACITY:		Unit #1 - 33,333 KW Unit #2 - 33,333 KW Unit #3 - 33,333 KW
TOTAL INSTALLED CAPACITY	:	100,000 KW
DATE OF INITIAL GENERATION	:	September 1966

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APRIL 1980
SHEET 1

POTENTIAL NEW RESOURCES

A.	NEW RESOURCES - NEW FACILITIES	
	1. PUMPED STORAGE GREGORY COUNTY (S.D.) - - - WOULD GENERATE 9 HOURS EACH WEEKDAY (45 HOURS PER WEEK) - 27% LOAD FACTOR	1,180 MW
	2. POSSIBLE IMPORT FOR ABOUT 17 YEARS FROM MANITOBA HYDRO	1,000 MW
	FORT BENTON (MONTANA)	360 MW*
	SUBTOTAL A	2,540 MW
B.	NEW RESOURCES AT EXISTING FACILITIES	
	1. FORT PECK PEAKING	185 MW
	2. GARRISON PEAKING	272 MW
	SUBTOTAL	457 MW
	3. CANYON FERRY PEAKING	90 MW
	4. YELLOWTAIL AFTERBAY (FIRM)	11 MW
	5. FT. RANDALL PEAKING	282 MW
	SUBTOTAL B	840 MW
C.	TOTAL POTENTIAL NEW RESOURCES	3,380 MW

FUTURE MARKETING

The following sheets present possible marketing of firm capability for 1990 and 2000. The sheets are not complete because the selections of the several options available have not been determined. Although we have made considerable study of system load factors and energy availability, the matter of firm power (with energy) sales and resultant purchases necessary has not been addressed.

This section will be expanded considerably for the June meetings. Also, possible marketing of potential resources will be treated in more detail.

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SUMMARY
ESTIMATED LEVEL OF IRRIGATION DEVELOPMENT
EASTERN DIVISION-PICK-SLOAN MISSOURI BASIN PROGRAM

YEAR	DEMAND (KW)	INCREASE FROM PREVIOUS LEVEL	ENERGY (MWH)	INCREASE FROM PREVIOUS LEVEL
1980	16,234		23,328	
1985	41,249	25,015	26,433	3,105
1990	91,692	50,443	102,180.3	75,747.3
1995	103,320	11,628	156,849.9	54,669.6
2000	136,823	33,503	212,543.7	55,693.8

	AVERAGE ANNUAL DEPLETIONS IN EXCESS OF 1975 LEVEL 1/ (ACRE FEET)
1980	330,000
1985	619,000
1990	1,026,000
1995	1,664,000
2000	2,311,000

1/ AVERAGE ANNUAL DEPLETIONS FOR 1975 LEVEL OF DEVELOPMENT ESTIMATED AT 6 TO 7 MILLION ACRE FEET.

DATA FROM: UPPER MISSOURI REGION
WATER AND POWER RESOURCES SERVICE

FIGURE 9

FORT THOMPSON TO GRAND ISLAND
345 Kilovolt Transmission Line

LOCATION : Between Fort Thompson, South Dakota, and Grand Island, Nebraska

OWNERSHIP : Western Area Power Administration

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APRIL 1980
SHEET 1 OF 4

POST-1985 MARKETING
(MEGAWATTS)

1. 1990

	AUGUST	DECEMBER
1990 DEPLETION LEVEL		
MAIN STEM (1961 COND)	2,070	2,005 1/
C.F. & 1/2 Y.T.	198	198
TOTAL	2,268	2,203
LESS PLANT USE	9	14
RESULTANT CAPABILITY	2,259	2,189
PLUS SPA HYD. DIVERSITY	25	25
EASTERN DIV. CAPABILITY	2,284	2,214
10% RESERVES	208	201
SALEABLE CAPABILITY	2,076	2,013
SCHEDULED PROJECT PUMPING	92	-
INTERDEPARTMENTAL	-	1
SUBTOTAL	92	1
CAPABILITY FOR COMMERCIAL FIRM	1,984	2,012
EXISTING COMMITMENTS FOR COMMERCIAL FIRM	1,982	1,967
AVAILABLE FOR NEW COMMITMENTS OBSERVING SCHEDULED DEPLETIONS & SCHEDULED PROJECT PUMPING	2	45

1/ ADJUSTED FROM 2,011 MW. HIGHER CAPABILITY CAUSED BY OPERATION AT FT. RANDALL

POST-1985 MARKETING
(MEGAWATTS)

	AUGUST	DECEMBER
REDUCTION IN AUGUST MAIN STEM CAPABILITY FROM 1985-1990	7	(7)
INCREASE IN SCHEDULED PROJECT PUMPING FROM 1985-1990	50	-
SUGGESTED POSSIBLE NEW COMMITMENTS	35	40
SUMMARY:		
CAPABILITY FOR COMMERCIAL FIRM	1,984	2,012
EXISTING COMMITMENTS	1,982	1,967
SUGGESTED POSSIBLE NEW COMMITMENTS	35	40
POSSIBLE 1990 COMMITMENTS	2,017	2,007
SURPLUS/DEFICIT	(33)	5
REQUIRED WITHDRAWAL BY GIVING 5-YEARS NOTICE	33	-
PERCENT POTENTIAL WITHDRAWAL	1.6	-
INCREASE IN 1990 MAIN STEM CAPABILITY FROM 1933 WATER CONDITIONS TO 1961 WATER CONDITIONS 2/	119	81

2/ POTENTIAL EXPOSURE FROM USE OF NEW CAPABILITY CRITERIA

POST-1985 MARKETING
(MEGAWATTS)

2. 2000

	AUGUST	DECEMBER
2,000 DEPLETION LEVEL		
MAIN STEM (1961 COND)	1,959	2,000 1/
C.F.& 1/2 YT	198	198
TOTAL	2,157	2,198
LESS PLANT USE	9	14
RESULTANT CAPABILITY	2,148	2,184
PLUS SPA HYDR. DIVERSITY	25	25
EASTERN DIV. CAPABILITY	2,173	2,209
10% RESERVES	198	201
SALEABLE CAPABILITY	1,975	2,008
SCHEDULED PROJECT PUMPING	137	-
INTERDEPARTMENTAL	-	1
SUBTOTAL	137	1
CAPABILITY FOR COMMERCIAL FIRM	1,838	2,007

1/ ADJUSTED FROM 1984 MW. ASSUMES SLIGHTLY LESS EFFECT FROM INCREASED DEPLETION.

POST-1985 MARKETING
(MEGAWATTS)

	AUGUST	DECEMBER
CAPABILITY FOR COMMERCIAL FIRM	1,838	2,007
POSSIBLE 1990 COMMITMENTS	2,017	2,007
SURPLUS/DEFICIT BY 2000	(179)	-
REDUCTION IN AUGUST MAIN STEM CAPABILITY FROM 1990 TO 2000	111	-
REDUCTION IN AUGUST MAIN STEM CAPABILITY FROM 1995 TO 2000	75	-
INCREASE IN SCHEDULED PROJECT PUMPING FROM 1990 TO 2000	45	-
INCREASE IN SCHEDULED PROJECT PUMPING FROM 1995 TO 2000	34	-
POSSIBLE 2000 COMMITMENTS	1,838 TO 2,017	2,007
REQUIRED WITHDRAWAL BY GIVING 5-YEAR NOTICE	0 TO 179	-
SUGGESTED 2000 COMMITMENTS		
INCREASE IN 2000 MAIN STEM CAPABILITY FROM 1933 WATER CONDITIONS TO 1961 WATER CONDITIONS 2/	83	62

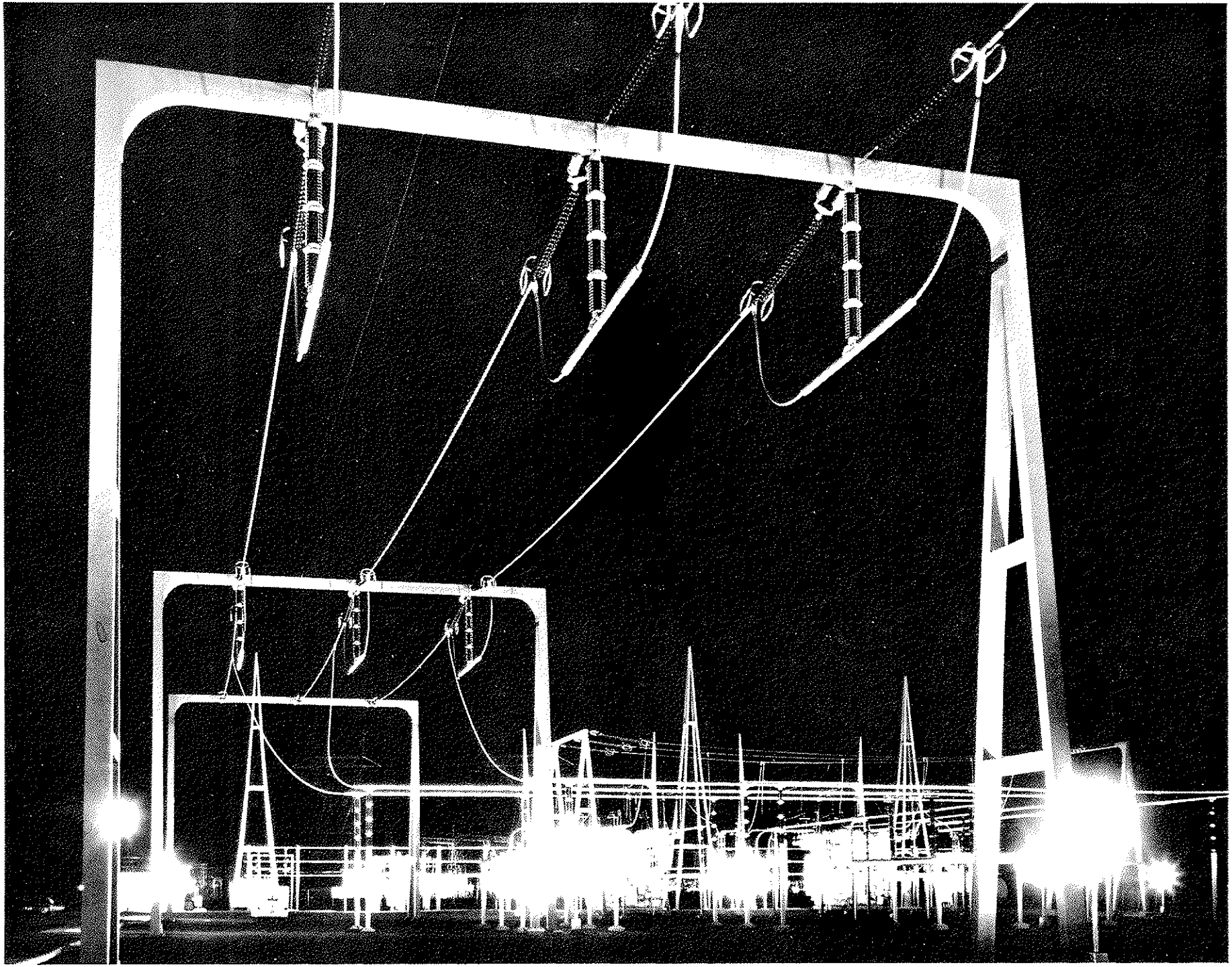
2/ POTENTIAL EXPOSURE FROM USE OF NEW CAPABILITY CRITERIA.

FIGURE 10

FORT THOMPSON SUBSTATION
345 Kilovolt Bus

LOCATION : Fort Thompson, South Dakota

OWNSHIP : Western Area Power Administration



APPENDIX

This section includes additional detail on resources and on system load factors (energy use).

HISTORICAL WATER SUPPLY
MISSOURI RIVER AT SIOUX CITY *
1898-1979

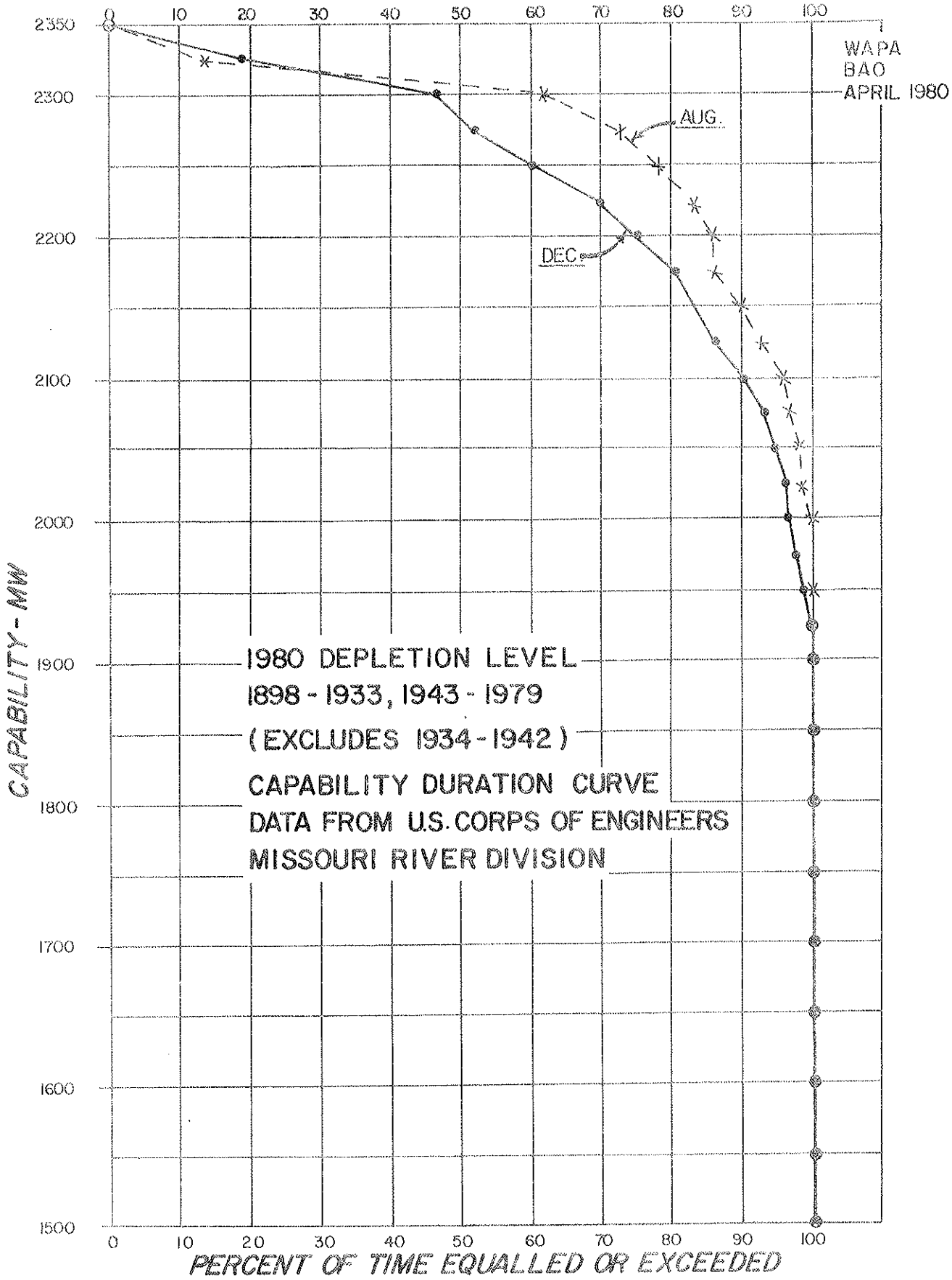
	NUMBER OF YRS EXPERIENCED	PERCENT OF TOTAL PERIOD	NUMBER OF YRS IN SEQUENCE
UPPER DECILE (33.2 MAF) OR BETTER	8	9.8	0
BETWEEN UPPER QUARTILE AND UPPER DECILE	13	15.9	2 (1915-16) 2 (1971-72)
UPPER QUARTILE (29.8 MAF) OR BETTER	21	25.6	3 (1907-09) 3 (1915-17) 2 (1927-28) 2 (1971-72)
BETWEEN MEAN AND UPPER QUARTILE	20	24.4	2 (1913-14) 2 (1924-25) 2 (1947-48) 2 (1950-51)
MEAN (24.9 MAF) OR BETTER	41	50.0	2 (1898-99) 4 (1906-09) 7 (1912-18) 3 (1923-25) 2 (1927-28) 3 (1942-44) 2 (1947-48) 4 (1950-53) 4 (1969-72) 3 (1974-76) 2 (1978-79)
MEAN OR WORSE	41	50.0	4 (1900-03) 2 (1910-11) 2 (1921-22) 13 (1929-41) 2 (1945-46) 8 (1954-61) 2 (1963-64)

HISTORICAL WATER SUPPLY (CONT.)

	NUMBER OF YRS EXPERIENCED	PERCENT OF TOTAL PERIOD	NUMBER OF YRS IN SEQUENCE
BETWEEN MEAN AND LOWER QUARTILE (19.9 MAF)	20	24.4	4 (1900-03) 2 (1910-11) 2 (1921-22) 2 (1945-46) 2 (1963-64)
LOWER QUARTILE OR WORSE	21	25.6	8 (1930-37) 3 (1939-41) 3 (1954-56) 2 (1958-59)
BETWEEN LOWER QUARTILE AND LOWER DECILE (15.0 MAF)	13	15.9	2 (1932-33) 3 (1954-56) 2 (1958-59)
LOWER DECILE OR WORSE	8 1/	9.8	4 (1934-37)

* ADJUSTED TO 1949 LEVEL OF DEVELOPMENT -- From Missouri River Division - Corps of Engineers

1/ Six years in the 1930's drought
Two years (1919 & 1961) outside the 1930's drought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1980 DEPLETION LEVEL
1898 - 1933, 1943 - 1979
(EXCLUDES 1934 - 1942)
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DATA FROM U.S. CORPS OF ENGINEERS
MISSOURI RIVER DIVISION
CAPABILITY - MW
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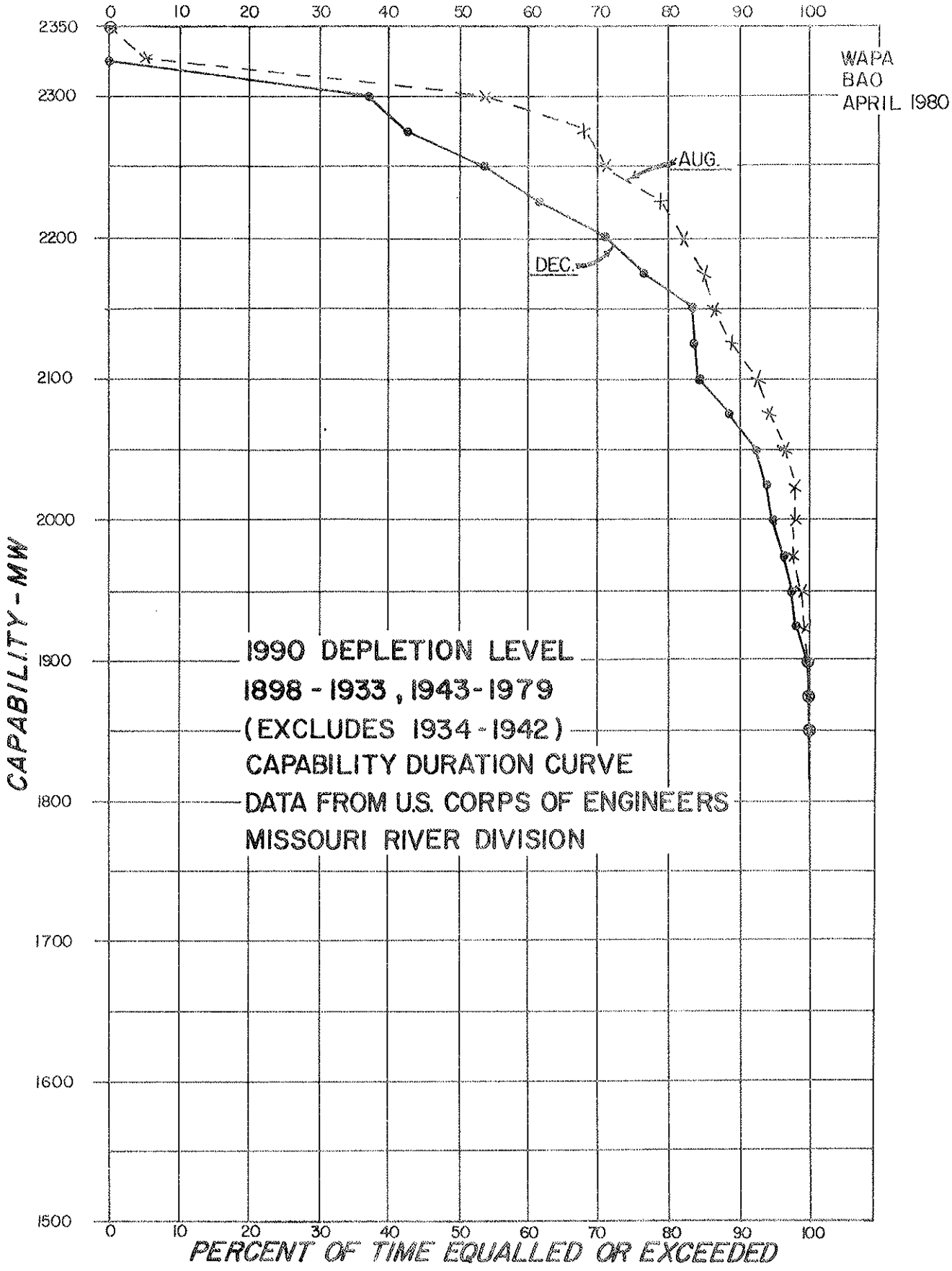
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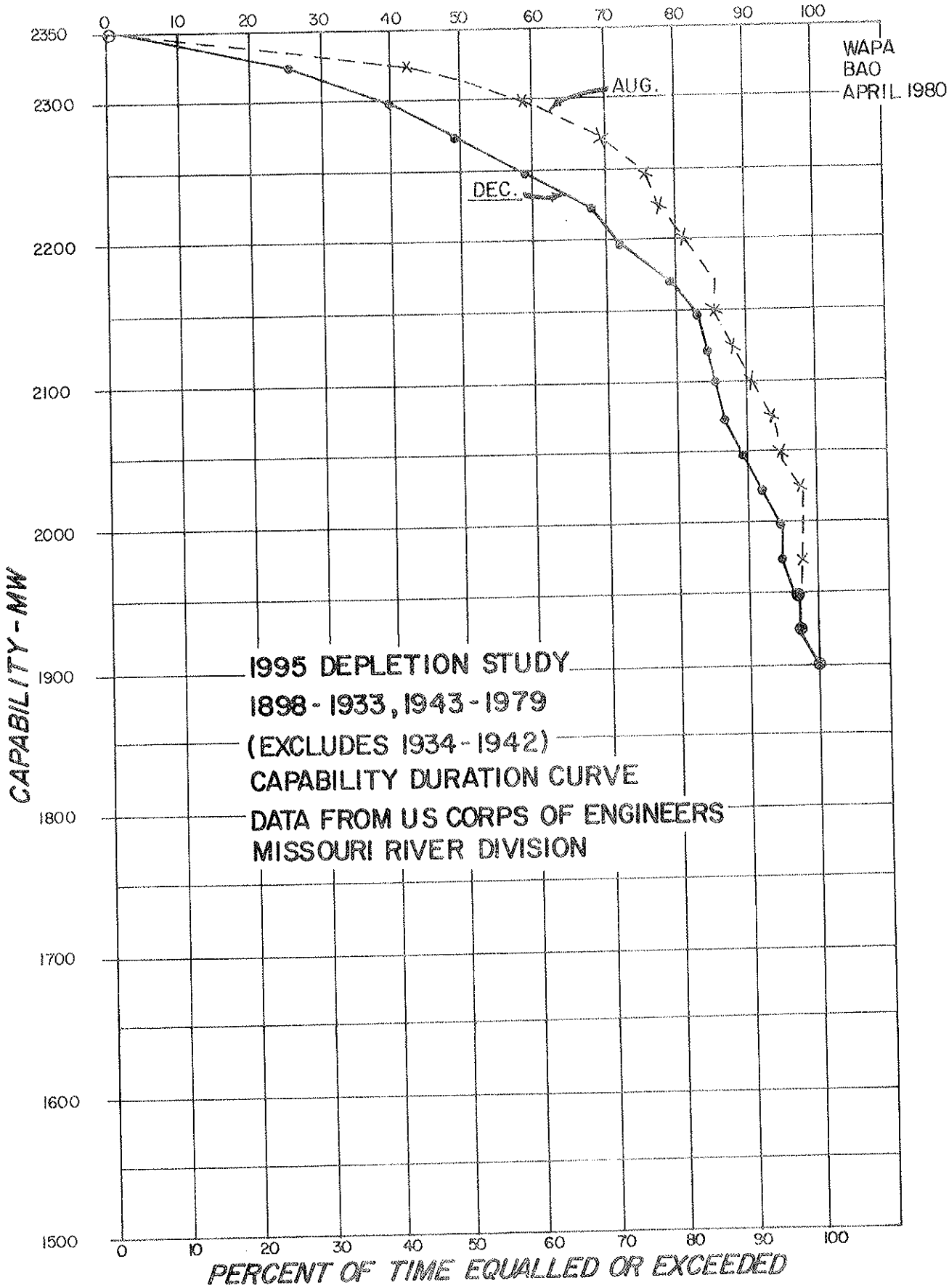
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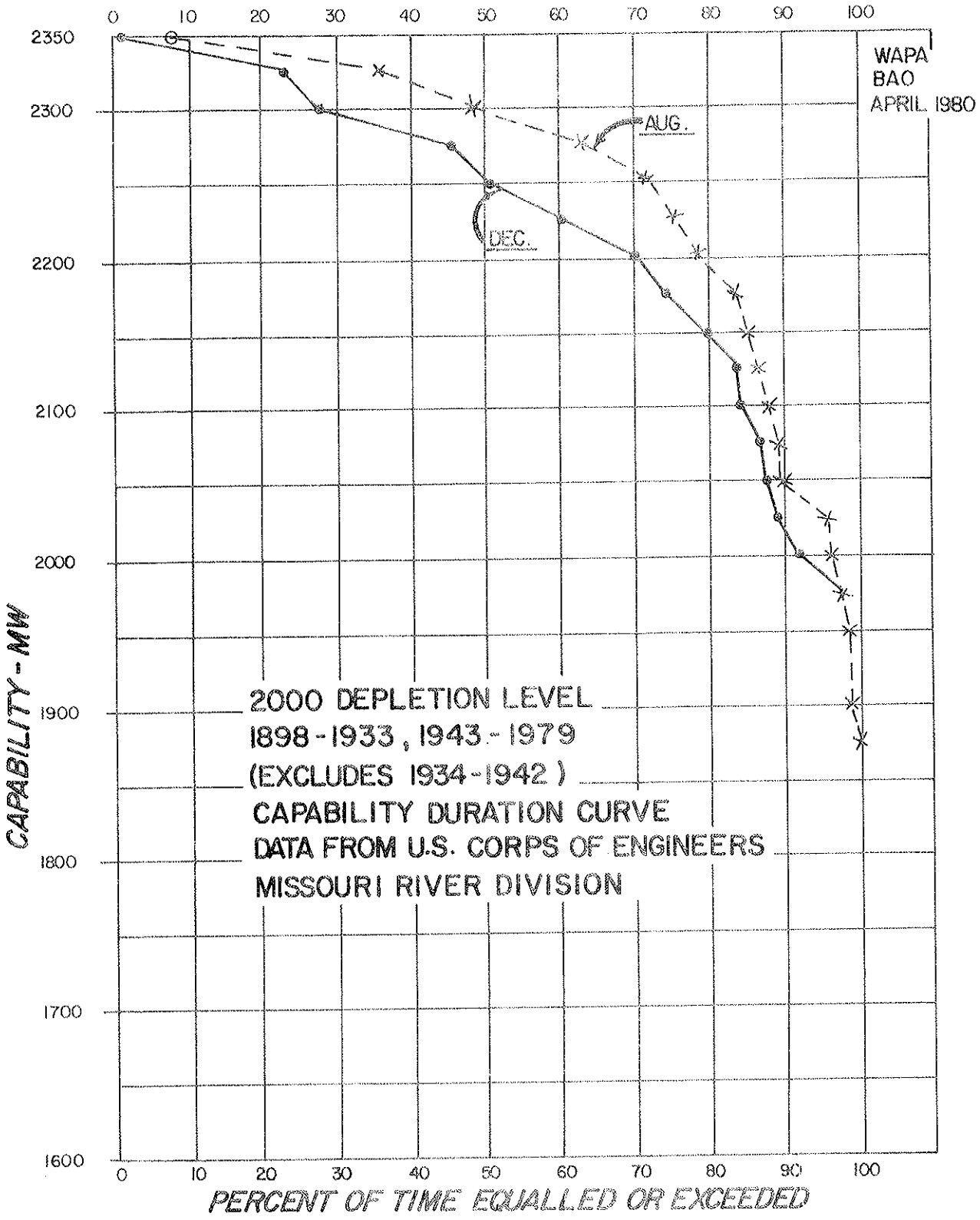
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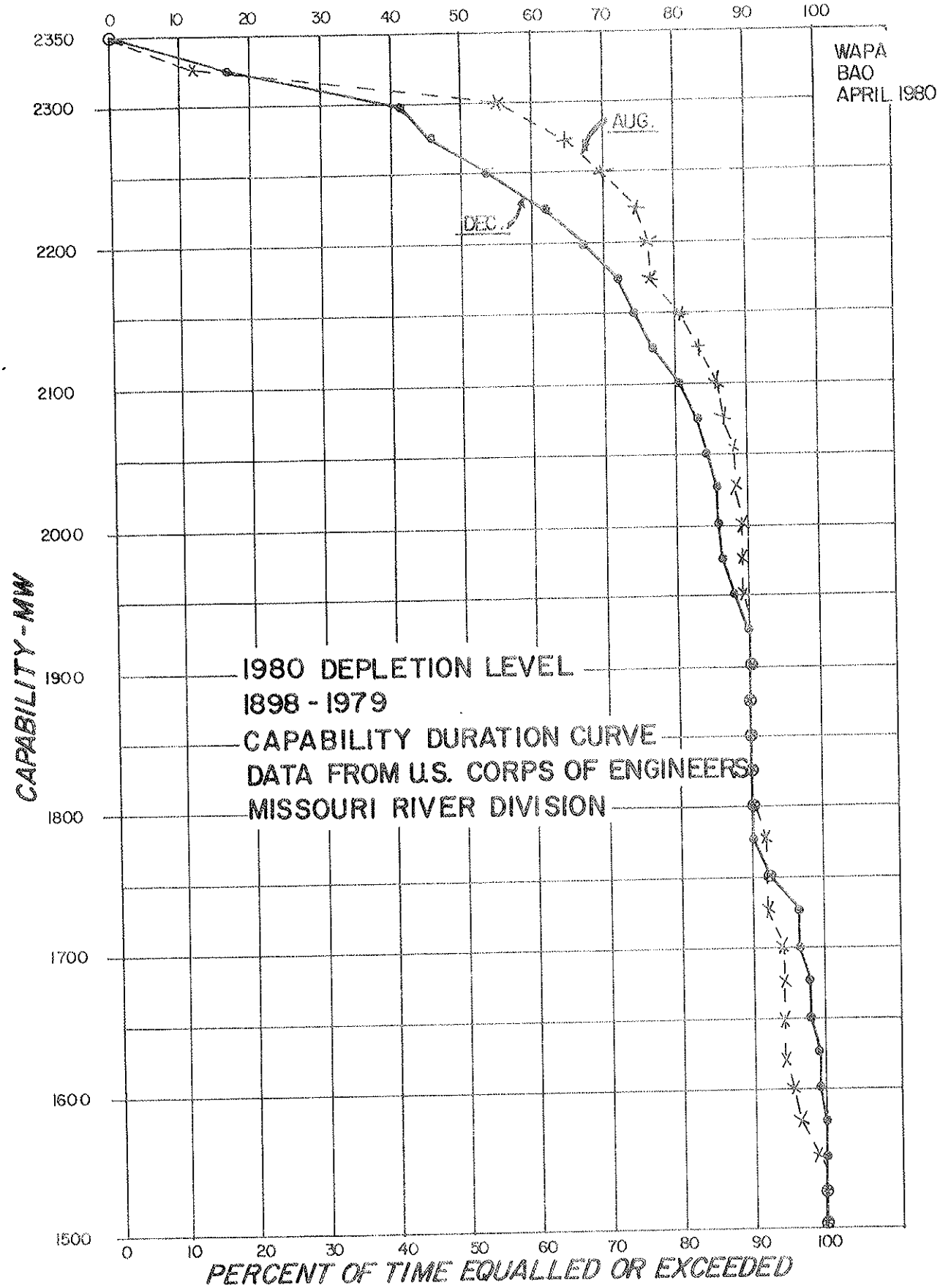
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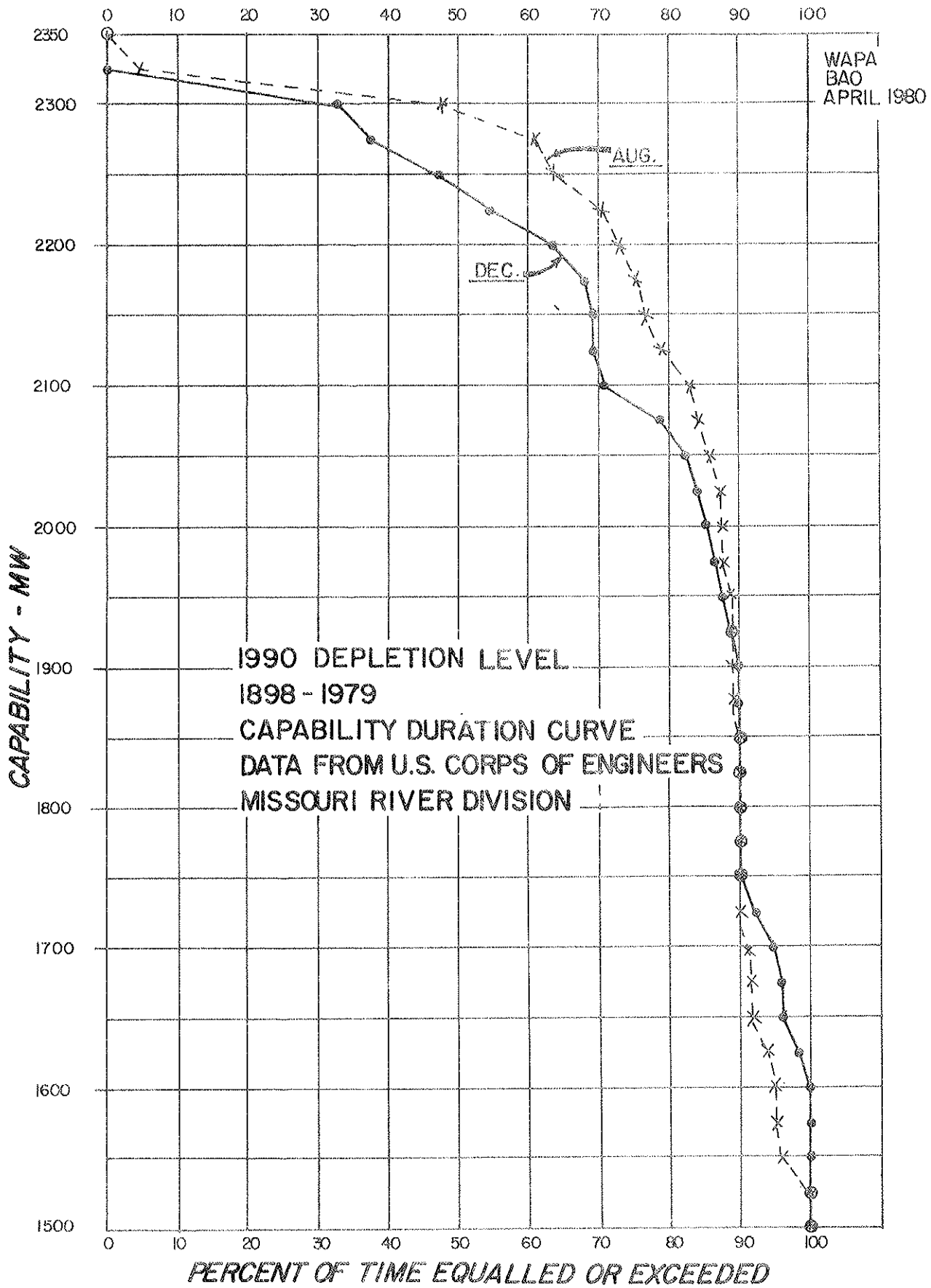
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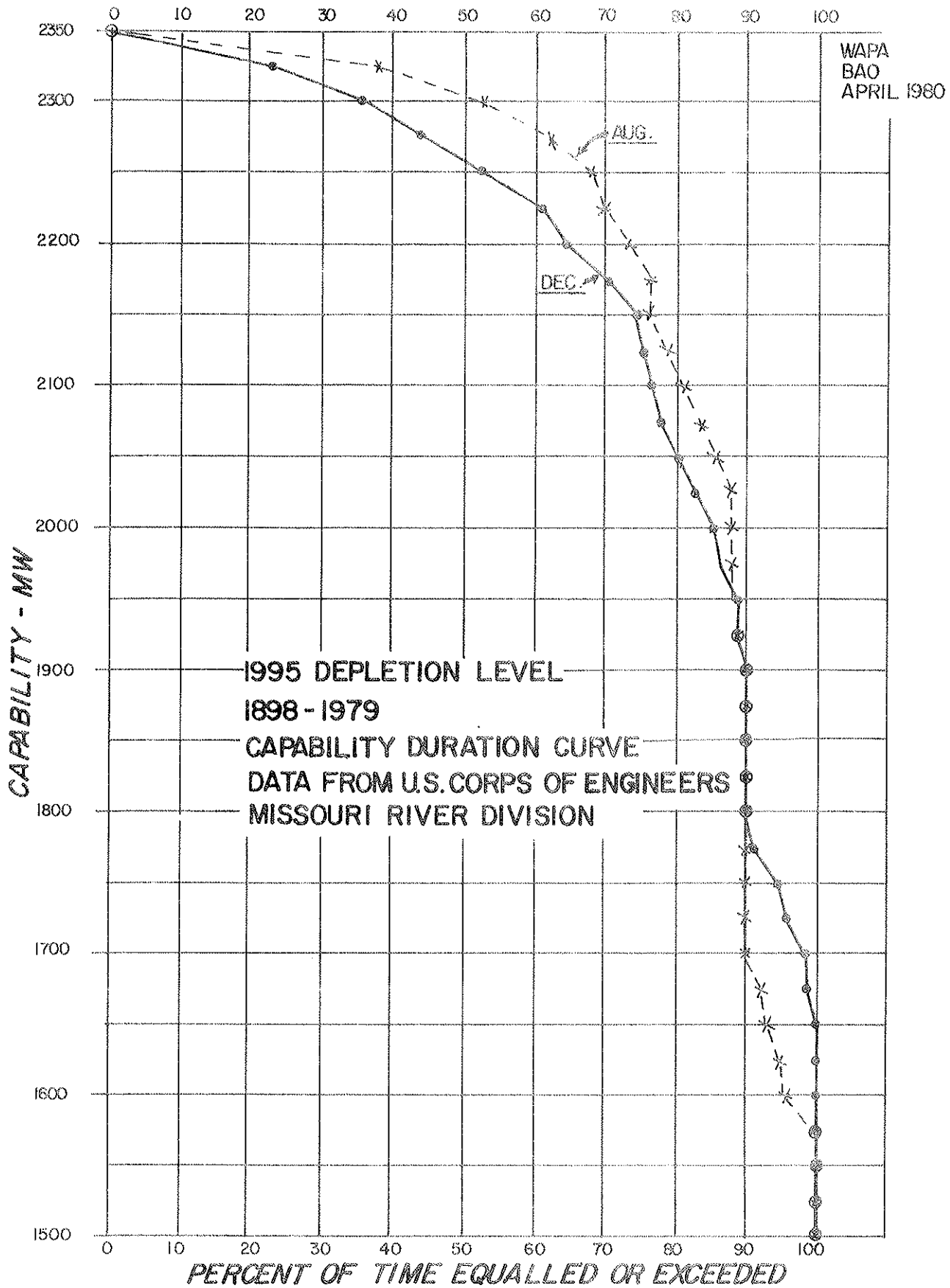
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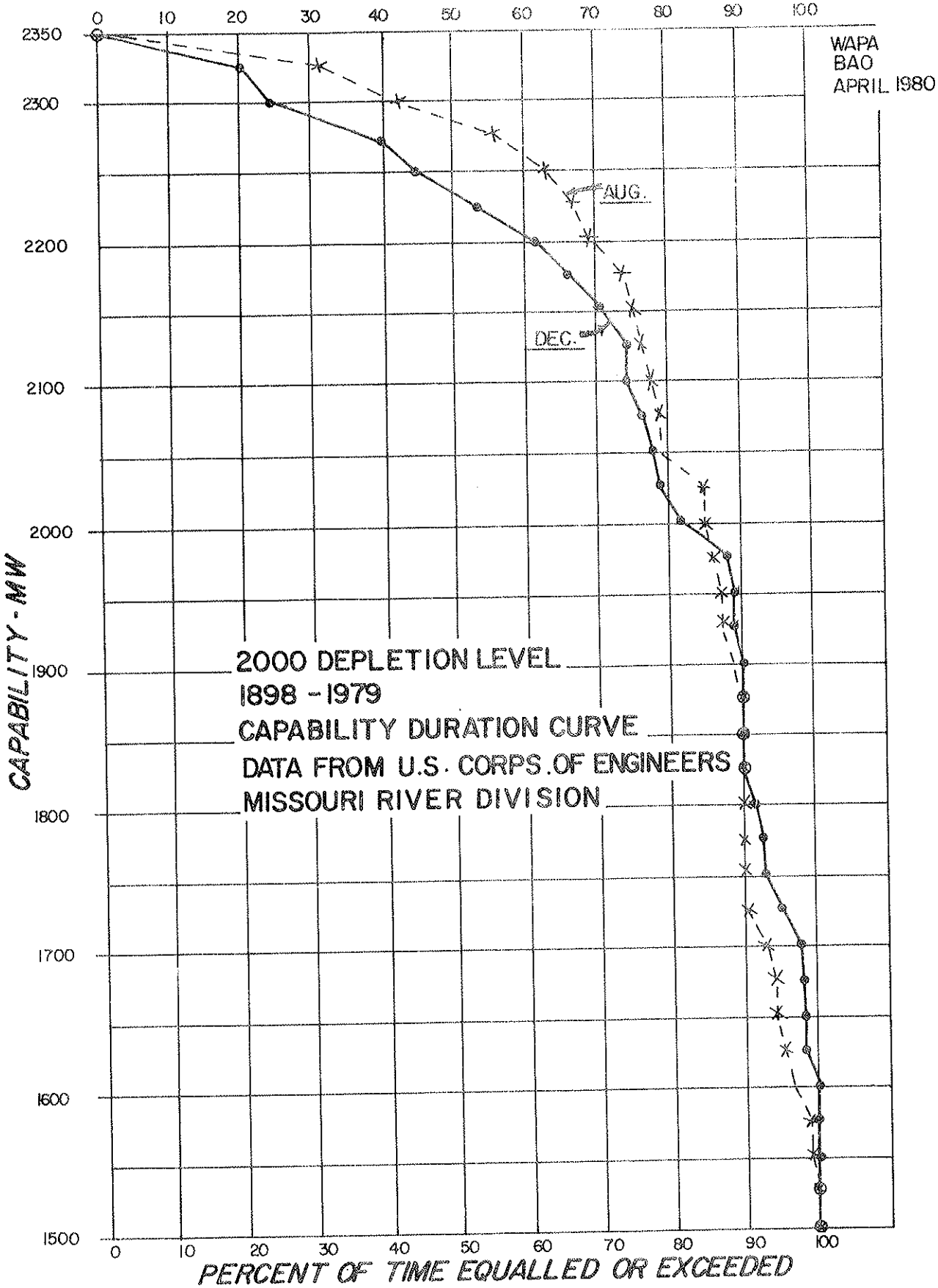
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PUBLIC POWER DISTRICT LOAD CHARACTERISTICS

Monthly Demands as a % of Peak

	Annual (%)	Seasonal (%)
January	68.6	100.0
February	66.5	96.9
March	58.7	85.5
April	53.8	78.3
May	63.7	63.7
June	85.9	85.9
July	100.0	100.0
August	94.8	94.8
September	80.6	80.6
October	60.0	60.0
November	61.5	89.6
December	66.1	96.4

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PUBLIC POWER DISTRICT LOAD CHARACTERISTICS

	Monthly Energy as a % of Annual Energy (%)	Monthly Energy as a % of Seasonal Energy (%)	Load Factor (%)
January	9.1	18.7	74.3
February	7.8	16.1	66.0
March	7.5	15.4	79.3
April	8.2	16.8	85.4
WINTER SEASONAL		100.0	67.7
May	6.8	13.2	62.2
June	8.3	16.1	54.3
July	11.4	22.2	66.4
August	10.0	19.4	59.2
September	7.4	14.4	51.6
October	7.5	14.7	73.3
SUMMER SEASONAL		100.0	49.1
November	7.5	15.5	68.8
December	8.5	17.5	74.4
ANNUAL	100.0		47.8

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COOP LOAD CHARACTERISTICS

Monthly Demands as a % of Peak

	Annual (%)	Seasonal (%)
January	100.0	100.0
February	96.3	96.3
March	84.9	84.9
April	78.9	78.9
May	59.6	86.5
June	59.9	86.9
July	67.6	98.1
August	68.9	100.0
September	64.6	93.7
October	66.2	95.6
November	77.9	77.9
December	93.8	93.8

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COOP LOAD CHARACTERISTICS

	Monthly Energy as a % of Annual Energy (%)	Monthly Energy as a % of Seasonal Energy (%)	Load Factor (%)
January	11.8	19.8	67.0
February	11.3	18.9	66.4
March	9.2	15.6	68.4
April	8.4	14.1	60.2
WINTER SEASONAL		100.0	57.5
May	6.4	15.8	63.4
June	6.4	15.8	61.0
July	6.9	17.1	60.3
August	7.4	18.1	60.6
September	6.7	16.4	58.6
October	6.8	16.8	60.4
SUMMER SEASONAL		100.0	56.7
November	8.3	14.0	60.4
December	10.4	17.6	65.5
ANNUAL	100.0		48.3

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MUNICIPAL LOAD CHARACTERISTICS

Monthly Demands as a % of Peak

	Annual (%)	Seasonal (%)
January	60.9	100.0
February	57.0	93.7
March	53.7	88.2
April	51.1	84.0
May	71.1	71.1
June	91.4	91.4
July	100.0	100.0
August	96.6	96.6
September	84.1	84.1
October	57.5	57.5
November	55.9	91.9
December	60.5	99.3

MUNICIPAL LOAD CHARACTERISTICS

	Monthly Energy as a % of Annual Energy (%)	Monthly Energy as a % of Seasonal Energy (%)	Load Factor (%)
January	8.5	18.6	71.9
February	7.6	16.4	67.6
March	7.5	16.3	78.8
April	6.9	15.0	69.0
WINTER SEASONAL		100.0	65.2
May	7.3	13.5	54.0
June	9.0	16.8	50.4
July	11.3	21.0	59.6
August	10.7	19.8	56.4
September	8.2	15.2	49.6
October	7.4	13.7	67.4
SUMMER SEASONAL		100.0	46.5
November	7.3	15.8	66.3
December	8.3	17.9	72.0
ANNUAL	100.0		43.3

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HISTORICAL LOAD FACTORS
Firm and Additional Firm

	1974-5 (%)	1975-6 (%)	1976-7 (%)	1977-8 (%)	1978-9 (%)	1979 (%)	5-Year Average (%)
November	63.5	64.9	66.8	66.4	63.0		64.9
December	68.3	65.1	67.2	64.0	69.7		66.9
ANNUAL		56.2	56.4	53.9	57.1	56.6	56.0
January	65.7	67.9	70.6	72.0	73.2		69.9
February	69.2	66.3	67.6	71.1	75.0		69.8
March	65.4	64.9	64.4	64.4	64.3		64.7
April	69.5	66.4	65.0	67.1	68.0		67.2
SEASONAL (Wint)	62.0	59.5	59.7	60.7	63.5		61.1
May	61.4	61.8	60.8	62.3	65.6		62.4
June	61.6	59.2	58.7	58.9	56.9		59.1
July	59.2	57.6	58.0	57.8	57.9		58.1
August	59.7	60.4	58.2	60.4	58.5		59.4
September	57.9	56.1	59.1	56.2	56.5		57.2
October	63.9	64.2	63.2	64.7	64.4		64.1
SEASONAL (Sum)	53.7	53.8	52.4	54.1	53.4		53.5

HISTORICAL LOAD FACTORS
FIRM AND ADDITIONAL FIRM

	1966-67 (%)	1967-68 (%)	1968-69 (%)	1969 (%)	3-Year Average (%)
November	63.5	62.4	62.9		62.9
December	61.9	61.1	63.4		62.1
ANNUAL	--	54.8	52.4	52.5	53.2
January	66.2	66.6	64.8		65.9
February	62.3	66.4	66.3		65.0
March	60.3	61.2	64.5		62.0
April	62.2	62.4	65.5		63.4
SEASONAL (Winter)	60.2	55.3	57.0		57.5
May	60.6	62.8	62.8		62.1
June	61.4	61.9	63.2		62.2
July	58.9	60.1	61.0		60.0
August	64.2	61.7	64.6		63.5
September	61.5	62.5	63.5		62.5
October	64.0	62.6	64.0		63.5
SEASONAL (Summer)	59.5	57.5	58.9		58.6

SEASONAL LOAD FACTOR THAT CAN BE SUPPORTED BY HYDRO GENERATION UNDER MEDIAN WATER CONDITIONS (Based on Existing Firm Commitments with Energy)

Saleable median hydro generation projected for the year 2000: 8974 GWH

Estimated split by seasons:

Summer	Winter
(56%)	(44%)
5035 GWH	3939 GWH

Seasonal load factor based on existing firm commitments with energy:

Summer	Winter
$\frac{5,035,000 \text{ MWH}}{1699 \text{ MW} \times 4392 \text{ hrs}} = 67.5\%$	$\frac{3,939,000 \text{ MWH}}{1608 \text{ MW} \times 4368 \text{ hrs}} = 56.1\%$

Multiplier to convert seasonal load factors to monthly load factors is estimated to be approximately 1.10.