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THE WORLD BANK

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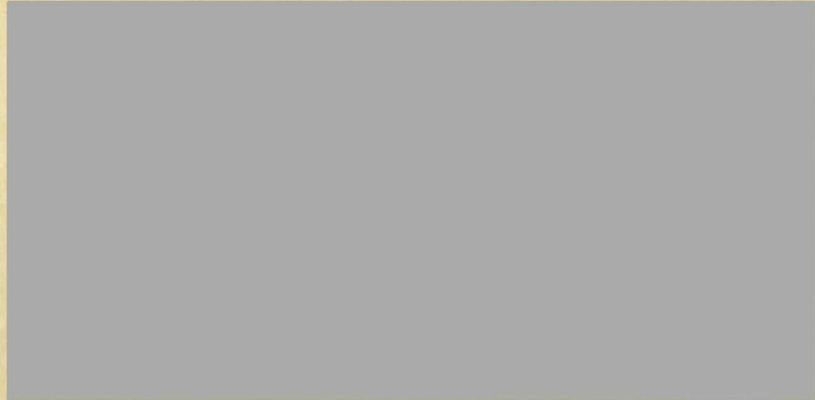
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Power - Ghana - V.R.A.

OFD SPECIAL STUDIES

85035--003



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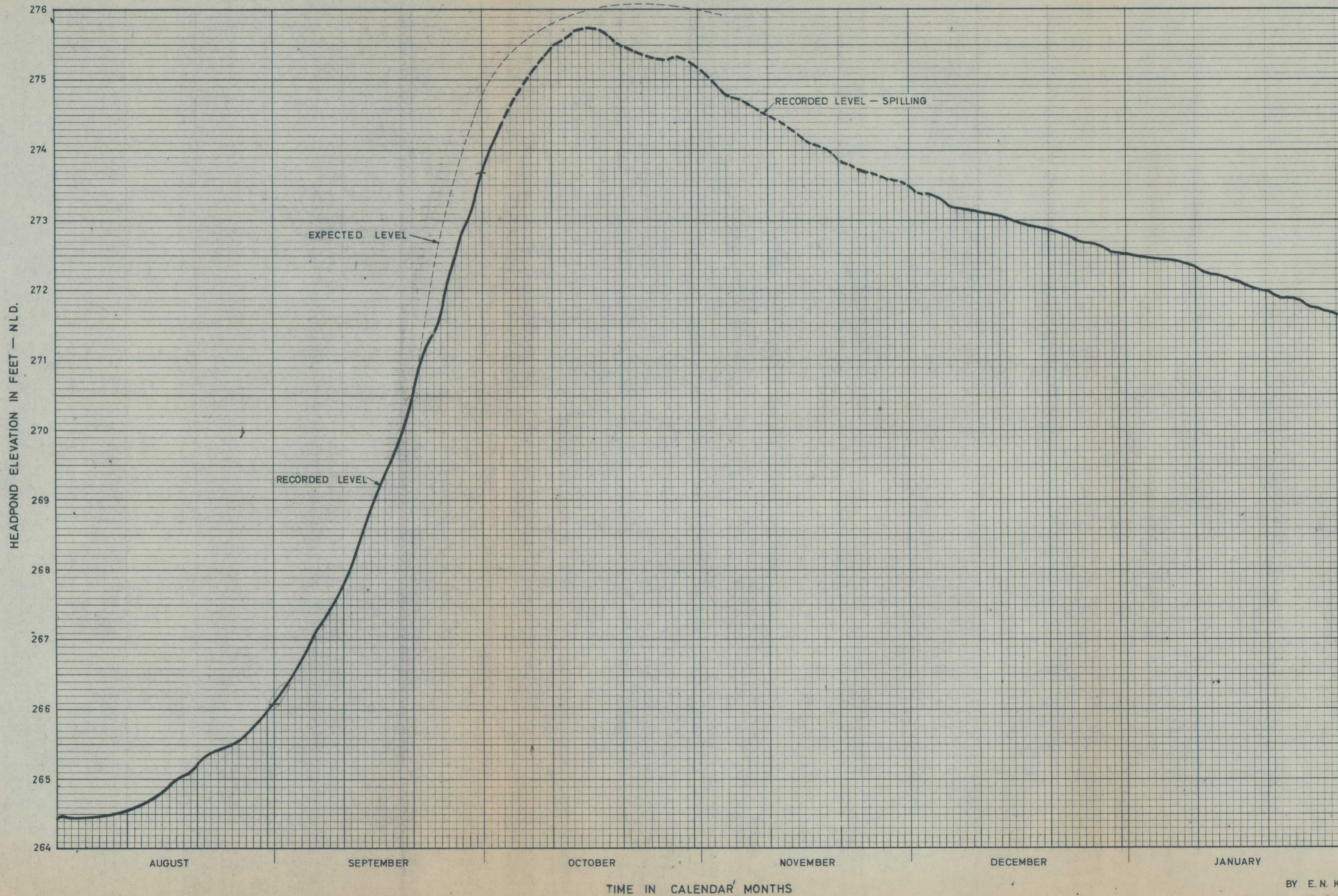
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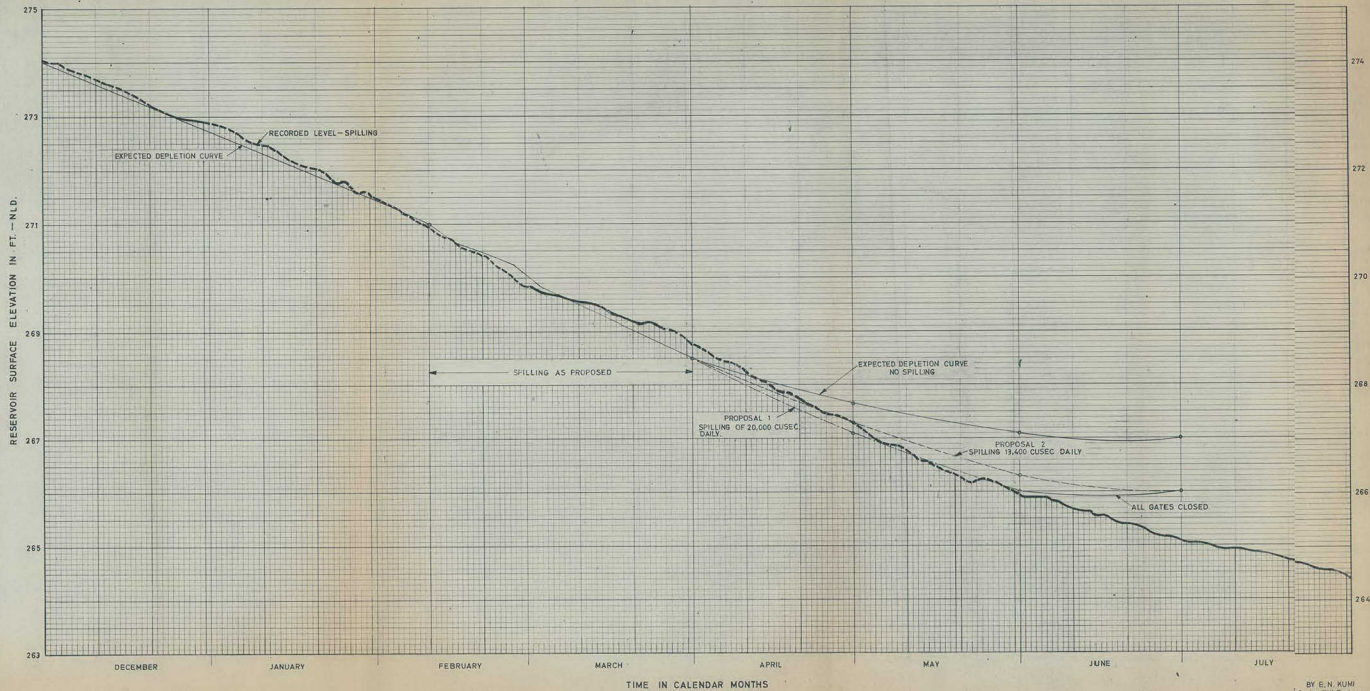
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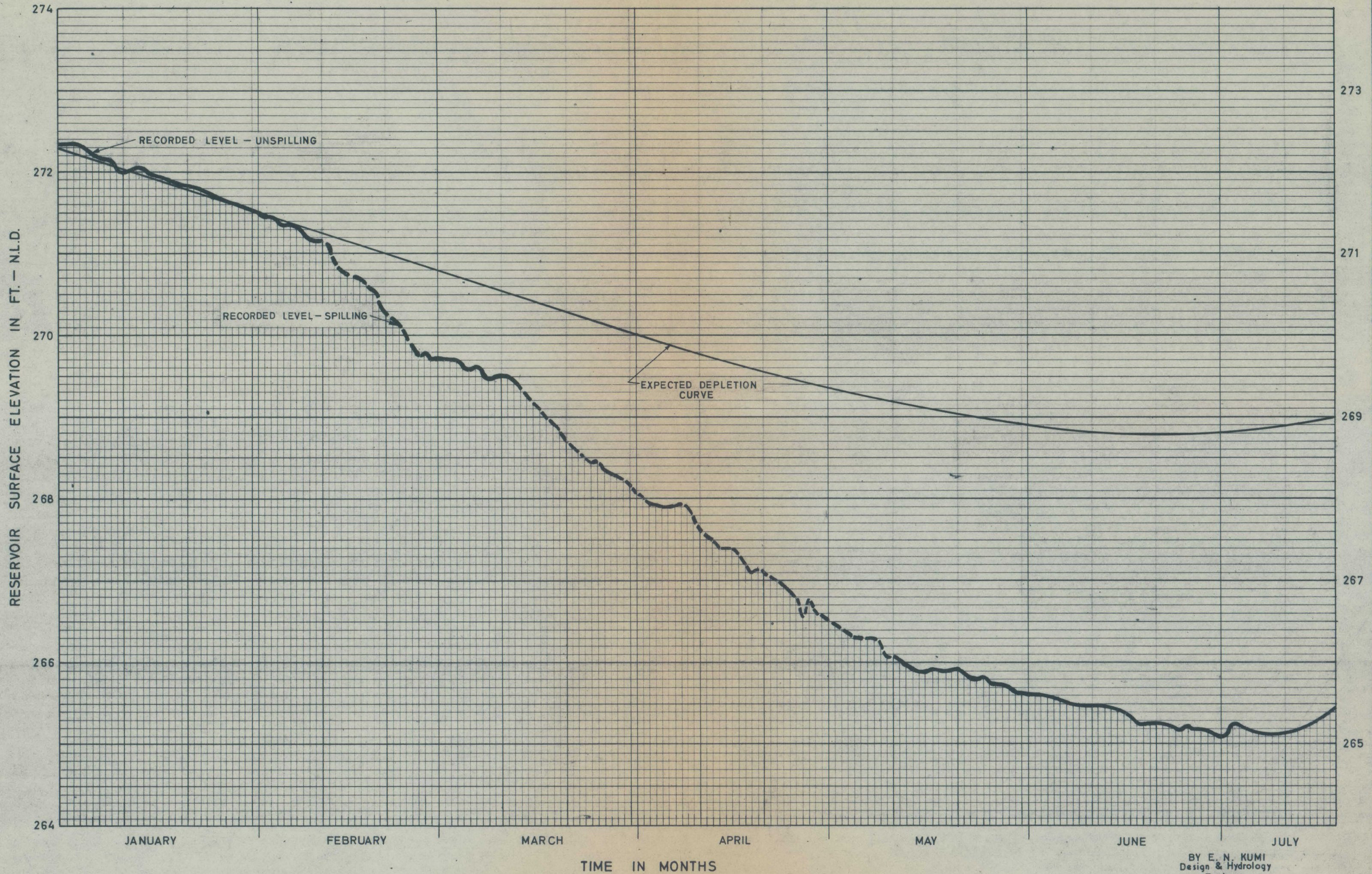
HEADPOND CONTROL CHART — 1970 FLOOD SEASON.



EXPECTED RESERVOIR DEPLETION CURVE WITH SPILLING PROPOSALS INCORPORATED
 DECEMBER, 1969 — JULY, 1970.

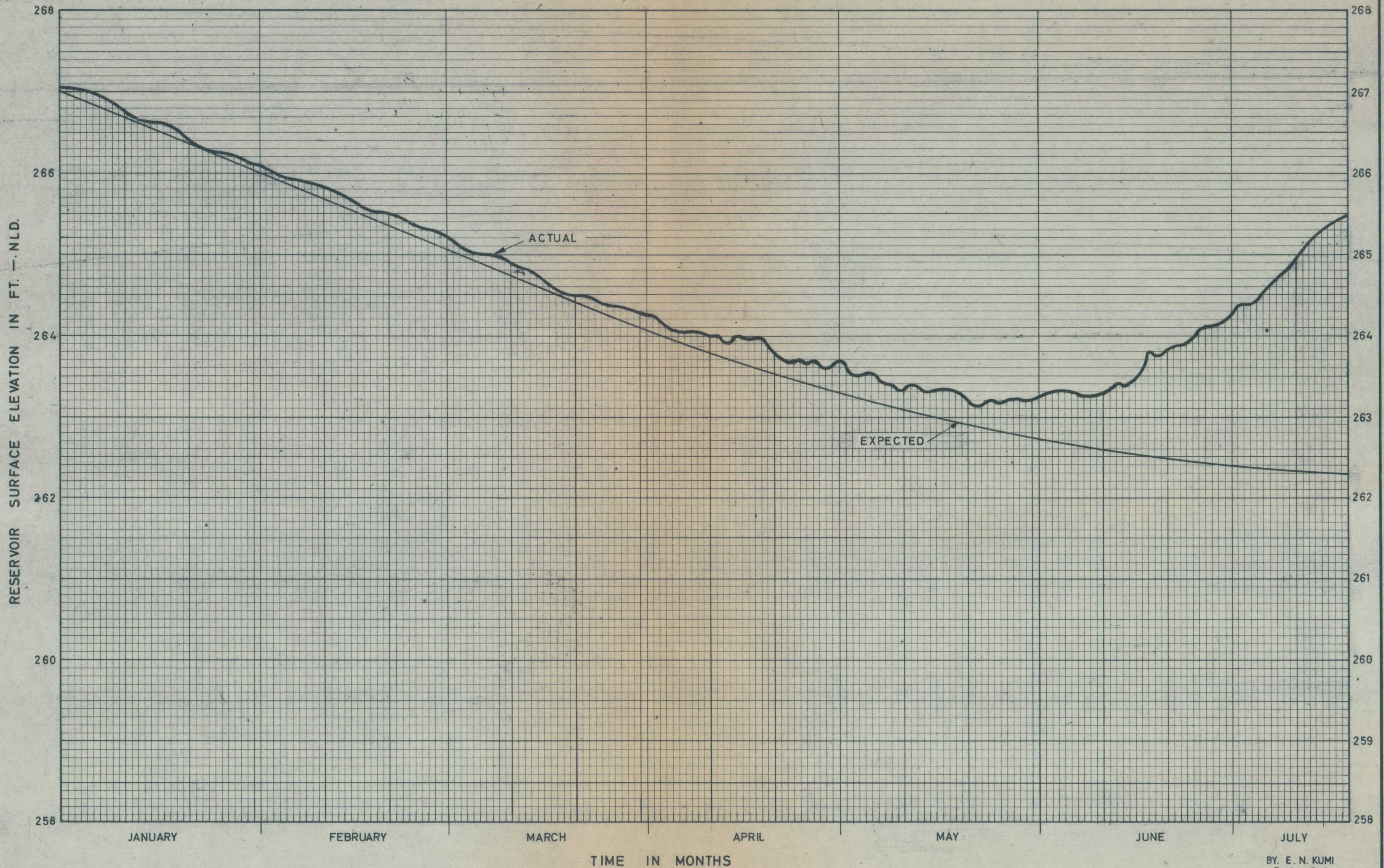


EXPECTED RESERVOIR DEPLETION CURVE
WITHOUT SPILLING FOR 1969



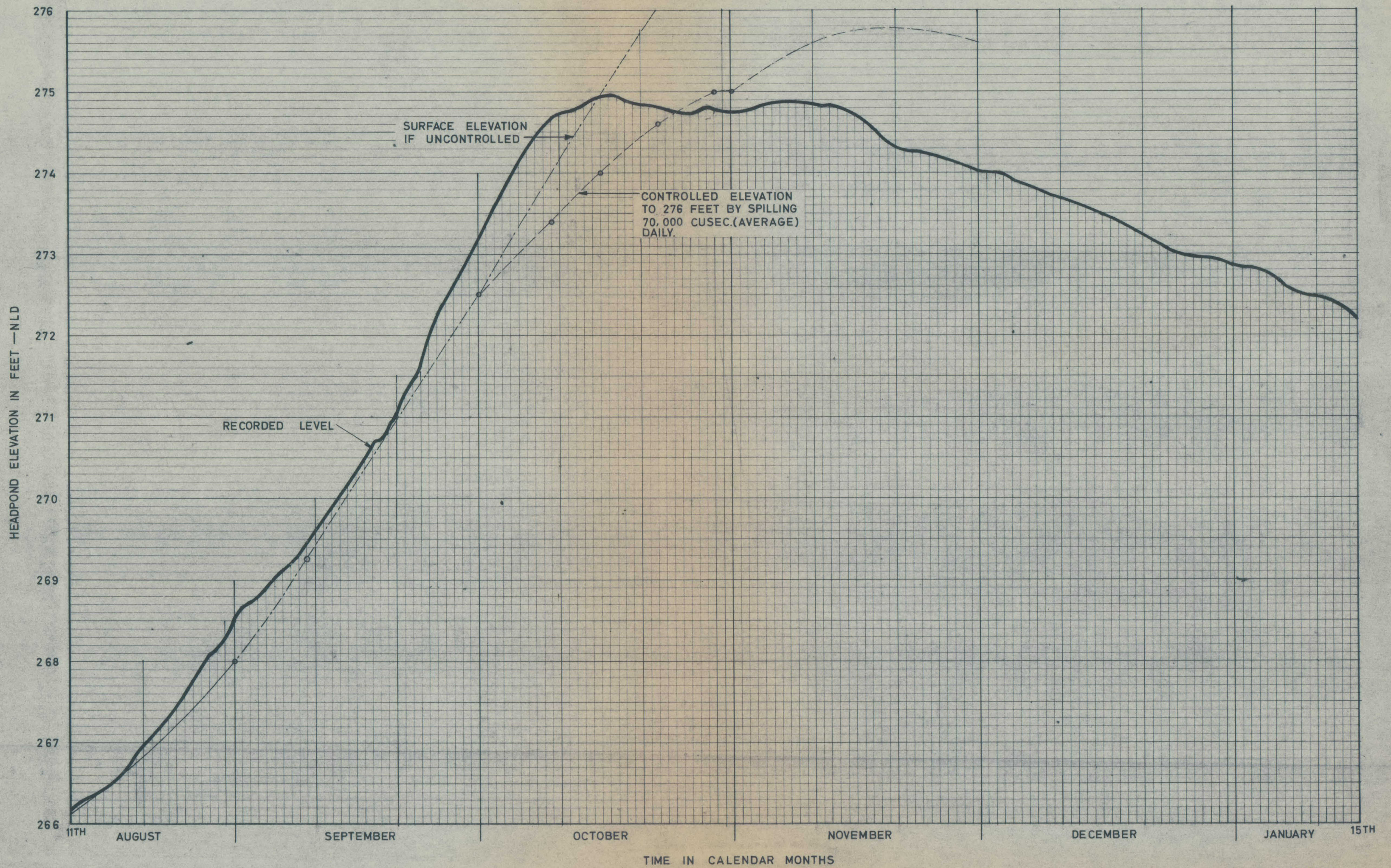
BY E. N. KUMI
Design & Hydrology
Engineer
6-1-69

EXPECTED RESERVOIR DEPLETION CURVE
FOR 1968



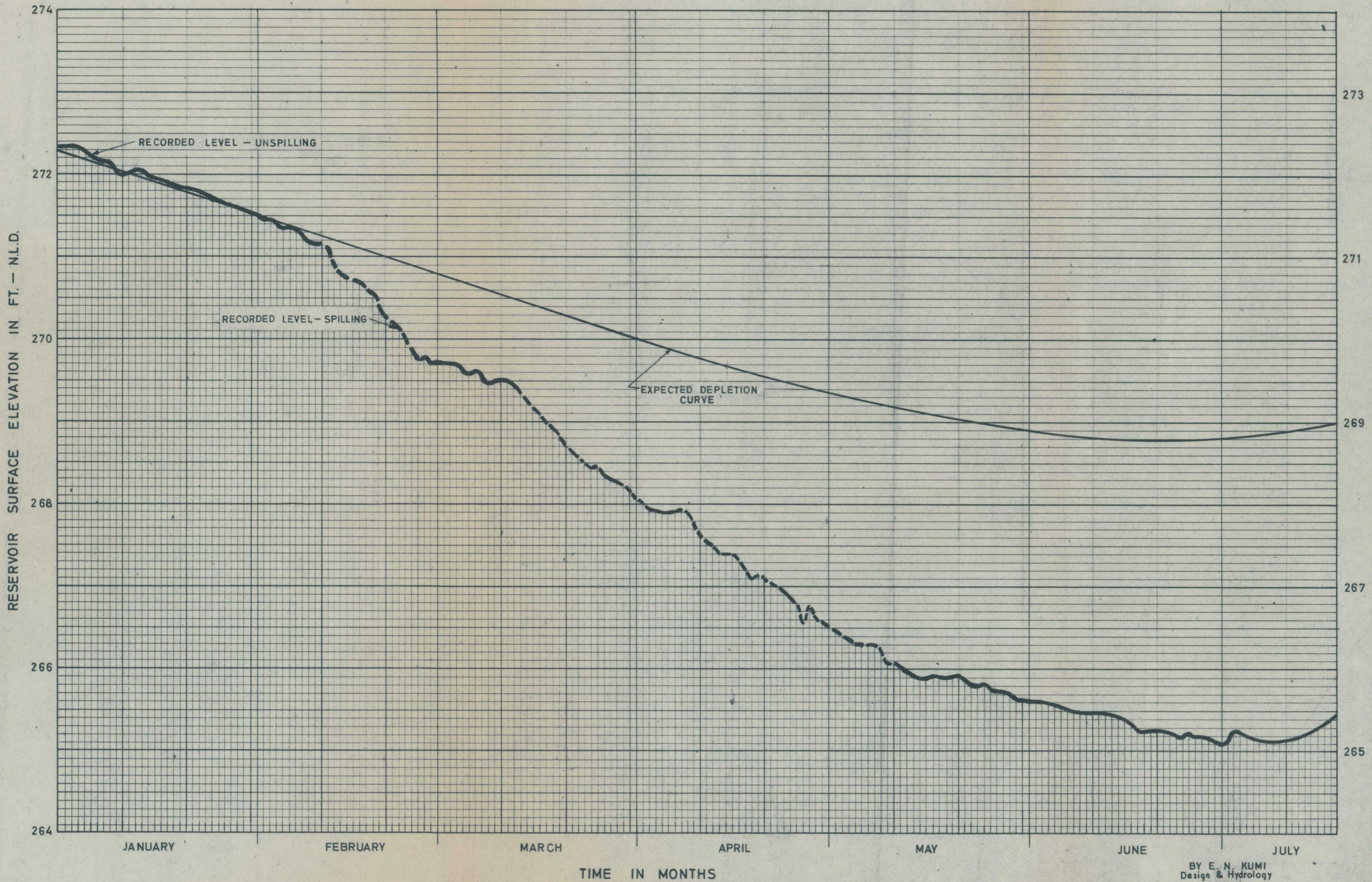
BY: E. N. KUMI
Design Engineer
11.1.68

HEADPOND CONTROL CHART — 1969 FLOOD SEASON



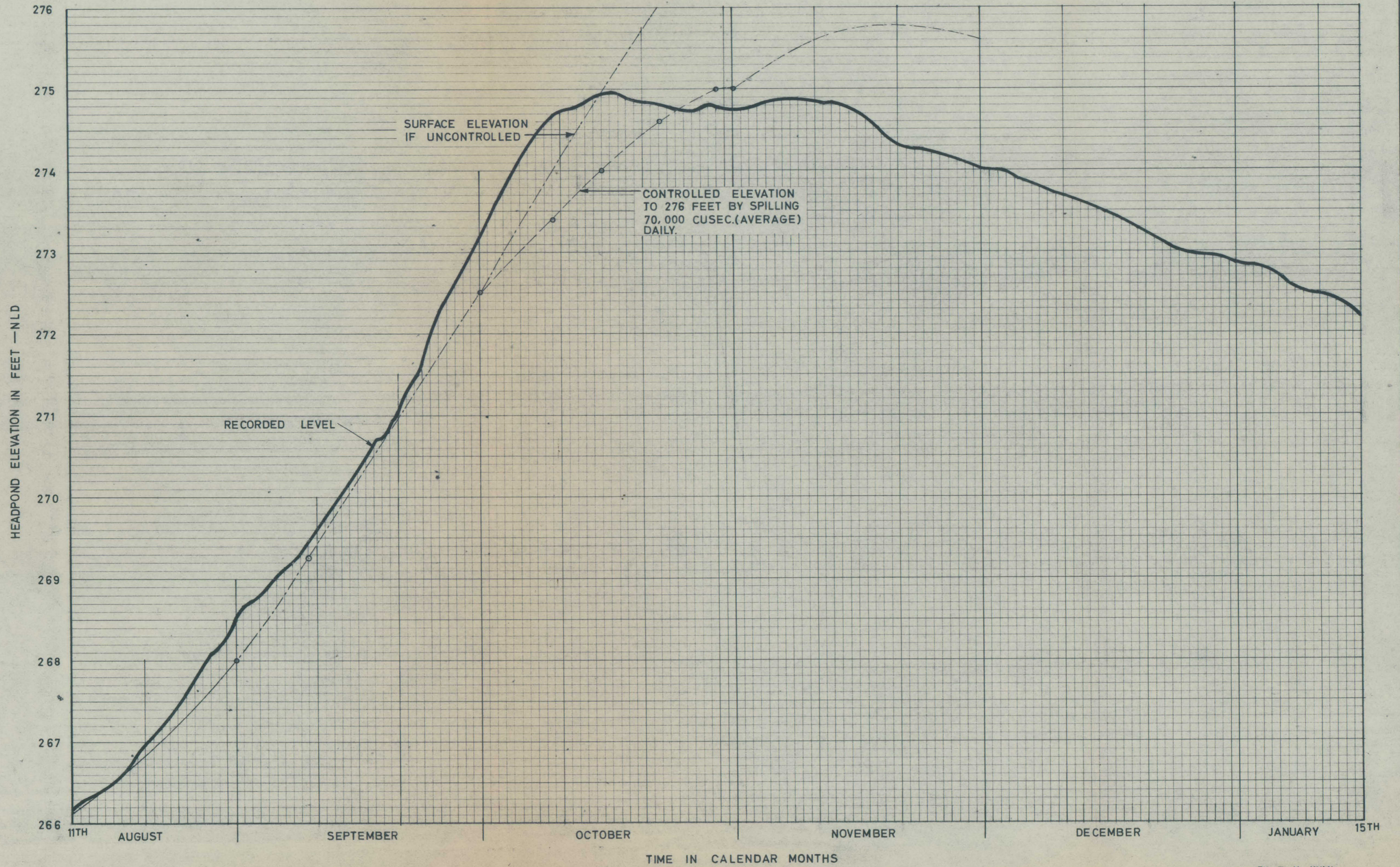
BY E. N. KUMI
Design & Hydrology
Engineer
13 : 8 : 69

EXPECTED RESERVOIR DEPLETION CURVE
WITHOUT SPILLING FOR 1969



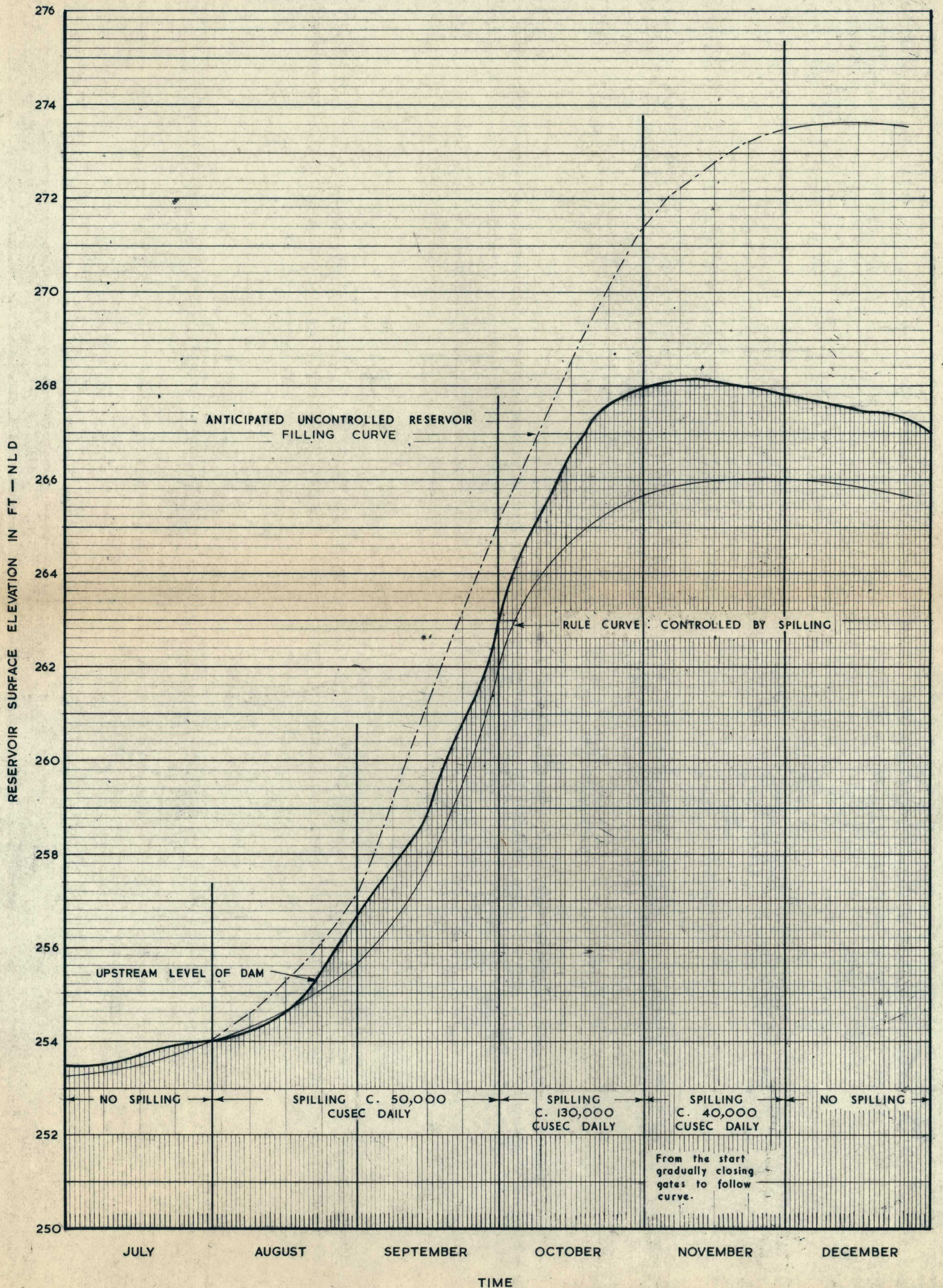
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Engineer
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HEADPOND CONTROL CHART — 1969 FLOOD SEASON



BY E. N. KUMI
Design & Hydrology
Engineer
13. 8. 68

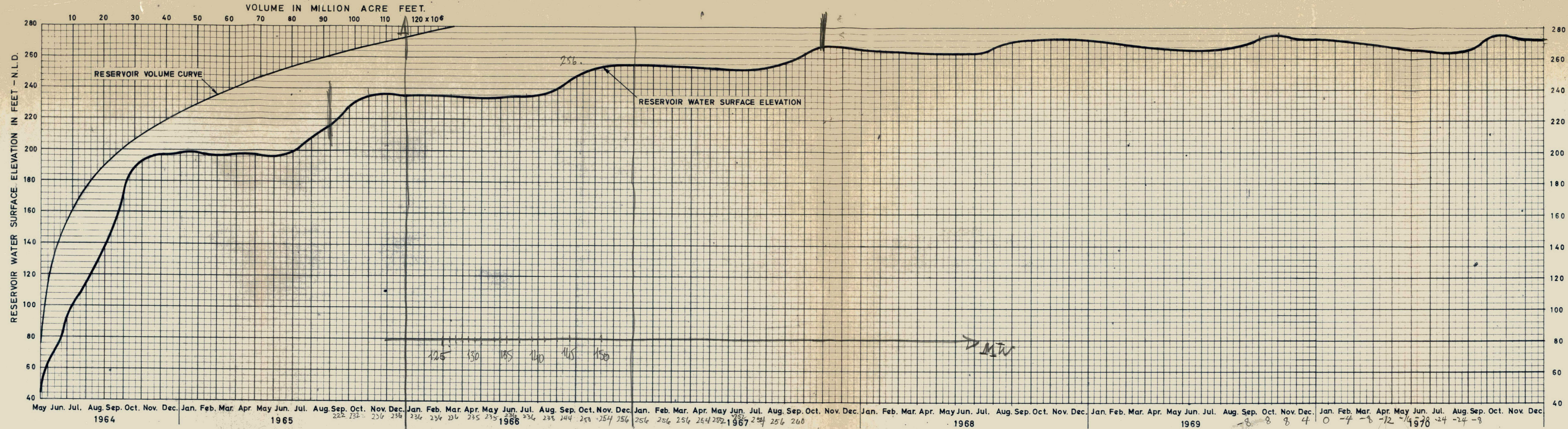
RESERVOIR REGULATION CHART FOR 1967



RESERVOIR REGULATION CHART
FOR 1968



BY E. N. KUMI
Design & Hydrology
Engineer.
5:7:68



N. L. D. = NATIONAL LEVEL DATUM.

NOTES
 Reservoir water surface elevation is read daily
 at 6:30 am. Reservoir volume curve is taken
 from volume III of A3 contract documents.

No.	DATE	REVISION	BY	APP.	APP.	REFERENCE DRAWINGS	NUMBER	CONSTRUCTION APPROVAL	APPROVED

SCALE	DATE
DRAWN <i>P. Dawab</i>	10/6/70
TRACED <i>do</i>	12/6/70
CHECKED <i>Roborhey</i>	11/11/71
DESIGNED	
ARCHITECT	
ENGINEER	
APPROVED	

VOLTA RIVER AUTHORITY

RESERVOIR FILLING CHART
 MAY, 1964 — DECEMBER, 1970

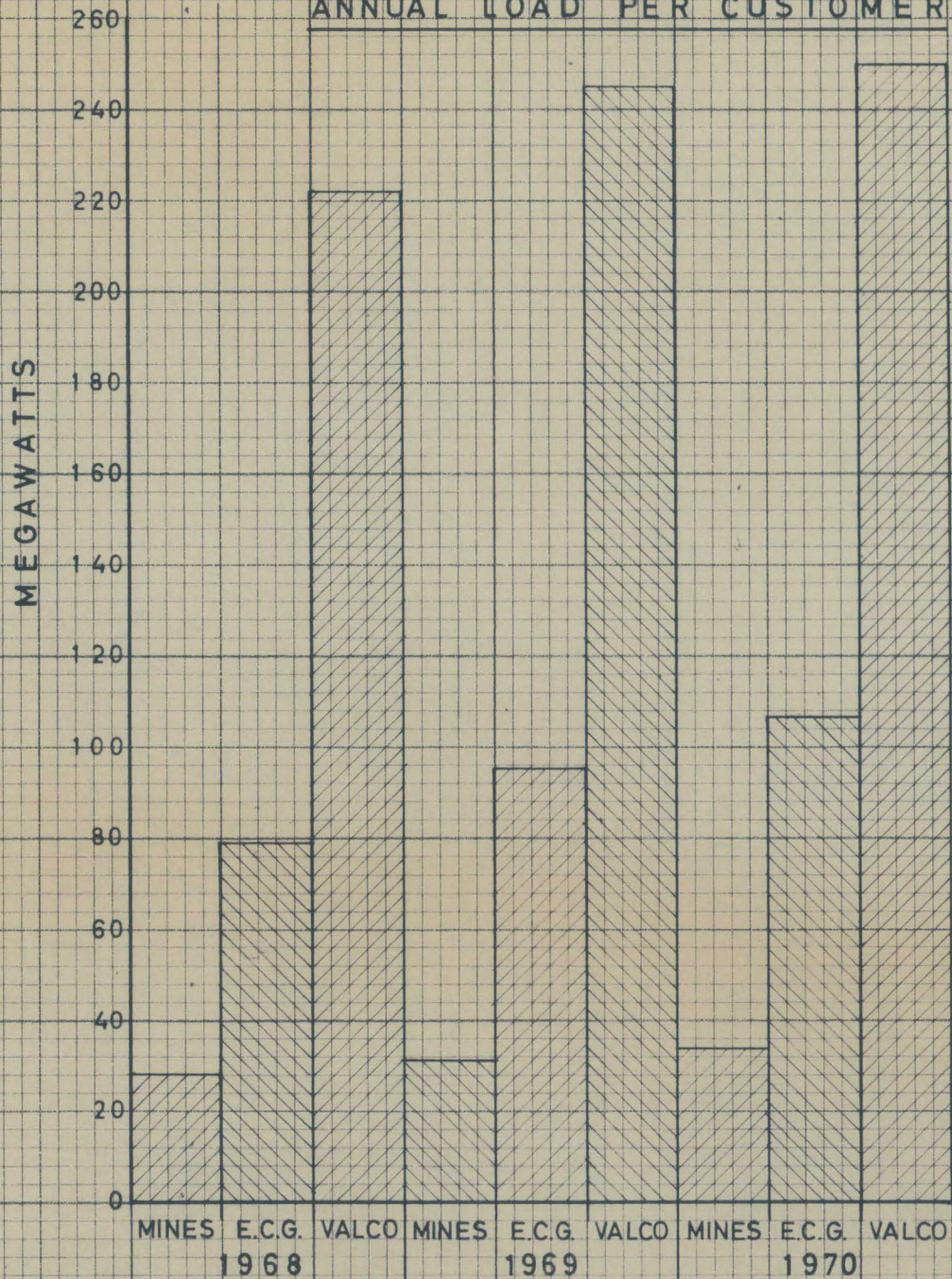
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JOB No. D-VRA/64/41

DWG. No. 9

REVISION
 R. _____

ANNUAL LOAD PER CUSTOMER



SPEED LEVEL - SPEED DROOP - LOAD TESTS

GROSS HEAD: 226.90ft
 (273.80ft - 46.90ft)

UNIT: 141

DATE: 1-12-69

2% DROOP					3% DROOP					4% DROOP					5% DROOP					GATE INDICATORS COMPARISON AT 5% DROOP	
S.L	M.W	M.X	P.F	G.O	S.L	M.W	M.X	P.F	G.O	S.L	M.W	M.X	P.F	G.O	S.L	M.W	M.X	P.F	G.O	ACT.	C.R.
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	0	0		10.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	20	15 ^T		22.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	52	20 ^T		30.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	73	23 ^T		40.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	92	25 ^T		48.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	110	27 ^T		57.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	123	27 ^T		65.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	134	27 ^T		74.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	142	27 ^T		85.0		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	146	28 ^T		89.5		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	151	29 ^T		102.0		

LEGEND

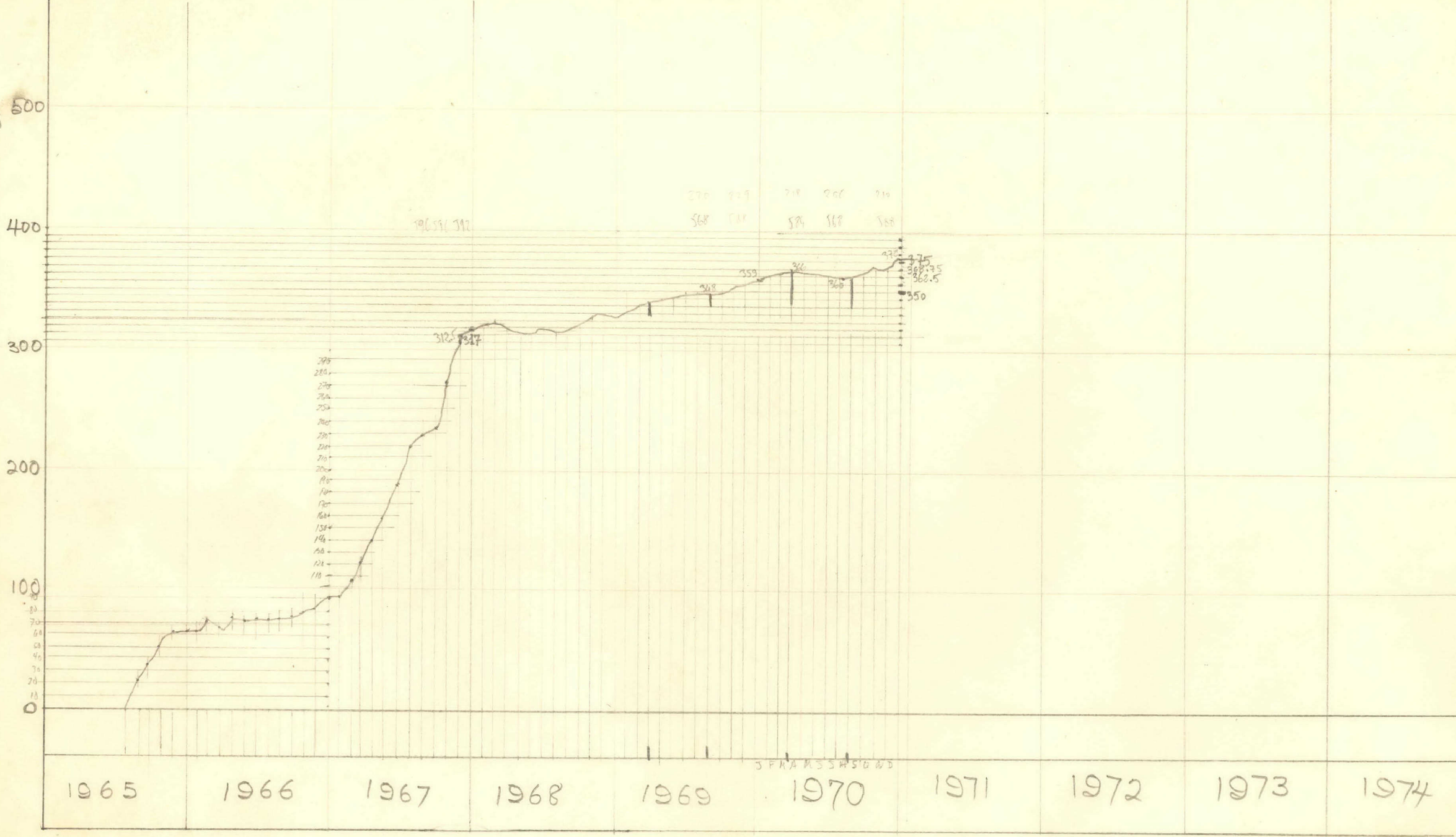
- S.L. - SPEED LEVEL
- G.O. - GATE OPENING TURBINE PIT
- ACT. - ACTUATOR
- C.R. ↓ CONTROL ROOM
- S.N.L. - SPEED-NO-LOAD

DASHPOT HOLE

TEMPORARY SPEED DROP.....

JKD:

MAXIMUM POWER DEMAND - MEGAWATTS (GENERATED)



1965 312

370 349 318 300 210
568 588 574 568 568

290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
110

3 F K A M S S H S U W D

1965 1966 1967 1968 1969 1970 1971 1972 1973 1974

VOLTA RIVER AUTHORITY
DEPARTMENT OF POWER OPERATIONS
AKOSOMBO

REPORT ON CAPABILITY TESTS CARRIED OUT ON
AKOSOMBO GENERATORS.

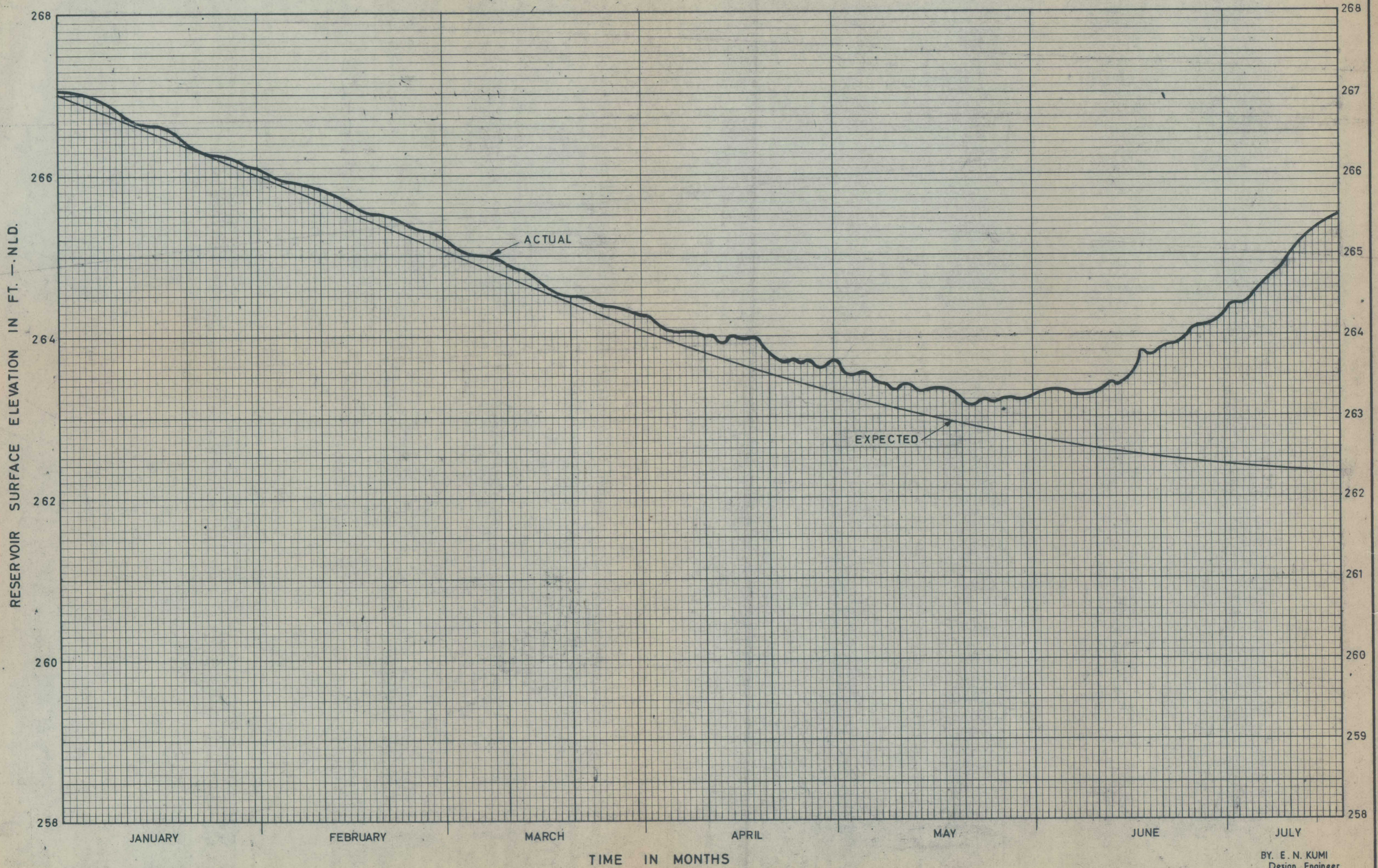
The following are results of capability tests carried out on Akosombo generators at varying head and tailwater elevations:-

Date	Unit	Full load	Gate Opening	<i>Gross HEADS.</i>			Remarks	
				Av. Head Water Elevation	Av. Tail Water Elevation	Gross Av. Head		
17-9-67	1G1	138MW	98%	259.00'	45.70'	213.30'		
18-9-67	1G1	138MW	98%	259.60'	45.70'	213.90'		
"	1G2	138MW	99%	259.60'	45.70'	213.90'		
"	1G3	139MW	100%	259.60'	45.70'	213.90'		
"	1G4	130MW	88%	259.60'	45.70'	213.90'		Gate could not be opened beyond 88
25-9-67	1G1	141MW	98%	261.30'	45.70'	215.60'		
"	1G2	141MW	99%	261.30'	45.70'	215.60'		
"	1G3	142MW	100%	261.30'	45.70'	215.60'		
"	1G4	136MW	98%	261.30'	45.70'	215.60'		
2-11-67	1G2	149MW	99%	267.90'	45.80'	222.10'		
10-11-67	1G1	149MW	99%	268.00'	45.80'	222.20'	Gate could not be opened beyond 98	
"	1G2	149MW	98%	268.00'	45.80'	222.20'		
"	1G3	152MW	101%	268.00'	45.80'	222.20'		
"	1G4	148MW	96%	268.00'	45.80'	222.20'		
27-4-68	1G1	142MW	102%	263.60'	46.00'	217.60'		
"	1G3	142MW	102%	263.60'	46.00'	217.60'		
"	1G4	142MW	102%	263.60'	46.00'	217.60'		
4-9-68	1G1	136MW	100%	270.75'	59.00'	211.75'	Governor started hunting.	
"	1G2	125MW	80%	270.75'	59.00'	211.75'		
"	1G3	132MW	97%	270.75'	59.00'	211.75'		
27-9-68	1G1	140MW	100%	271.68'	58.00'	213.68'	Stable	
16-12-70	1G1	151MW	100%	272.97'	46.26'	226.71'	Stable	

1G1 = 8
1G2,3 = 5
1G4 = 4

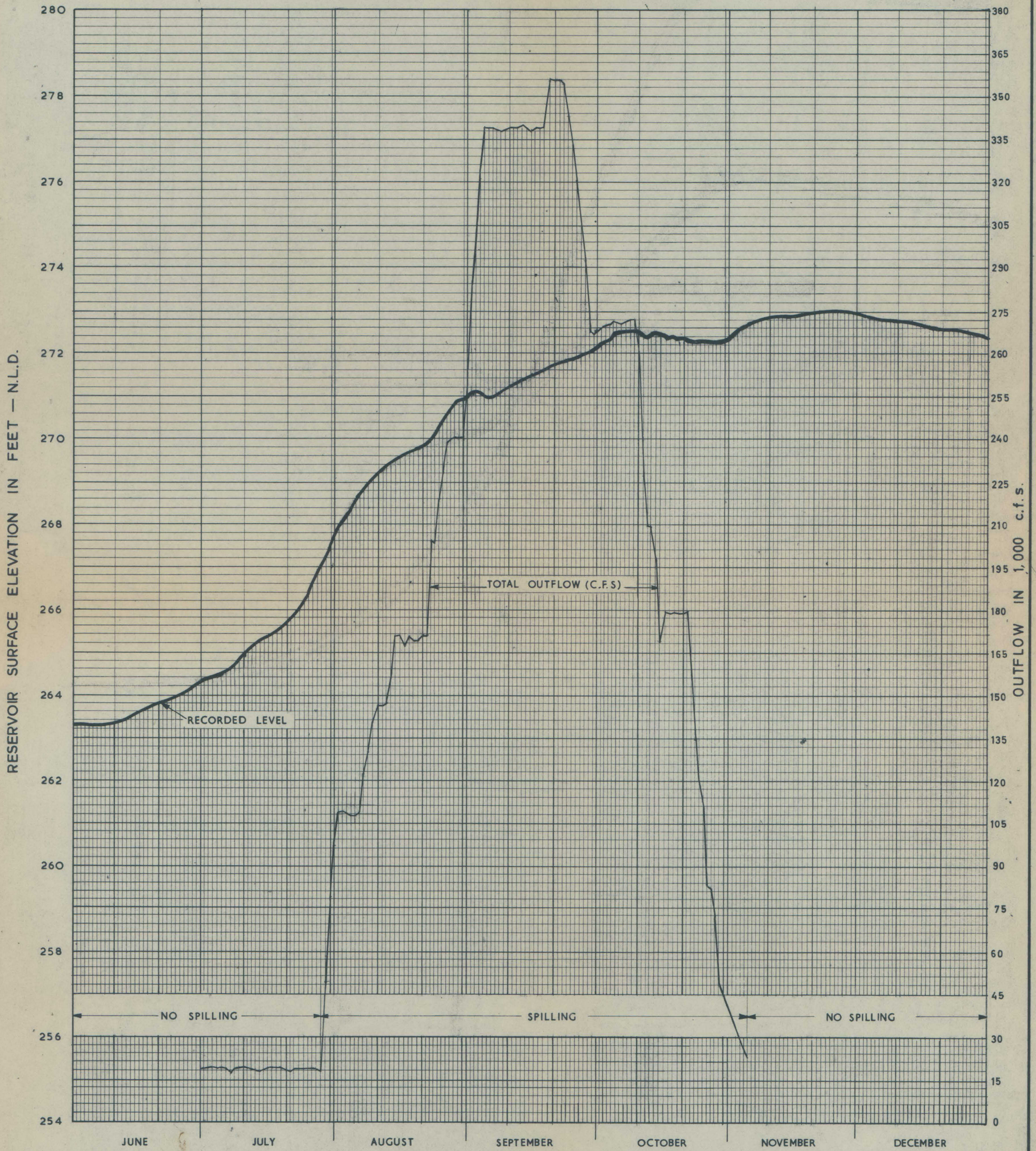
↑
J.S. Okpeti
OPERATING ENGINEER.

EXPECTED RESERVOIR DEPLETION CURVE
FOR 1968



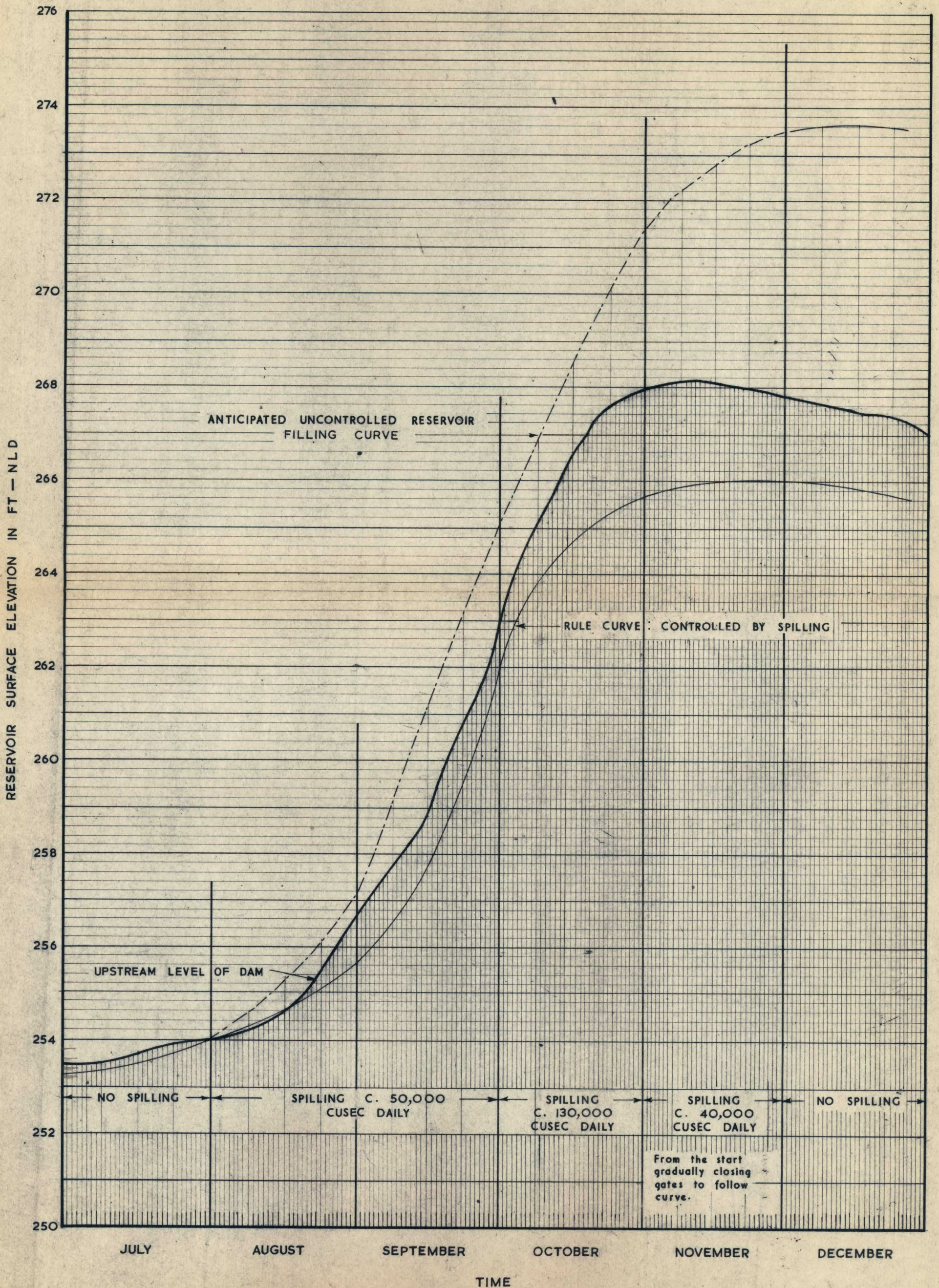
BY: E. N. KUMI
Design Engineer
11.1.68

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FOR 1968

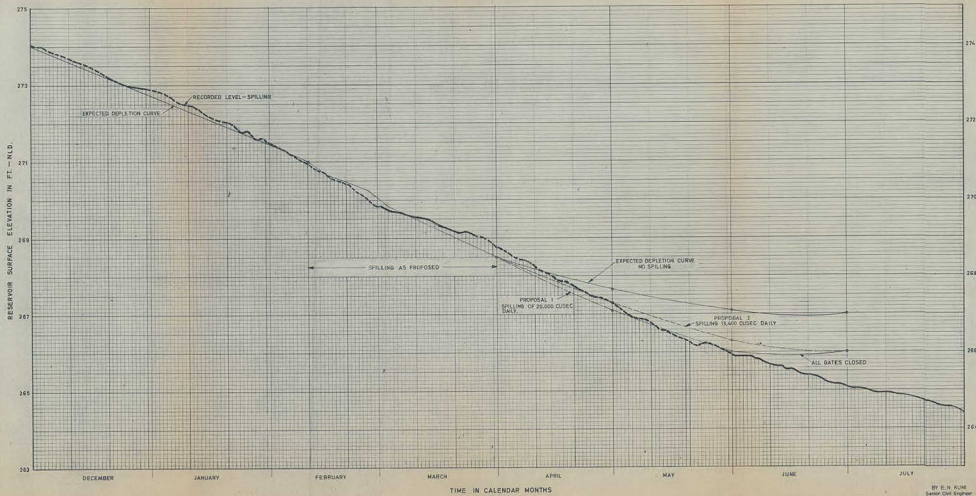


BY E. N. KUMI
Design & Hydrology
Engineer.
5:7:68

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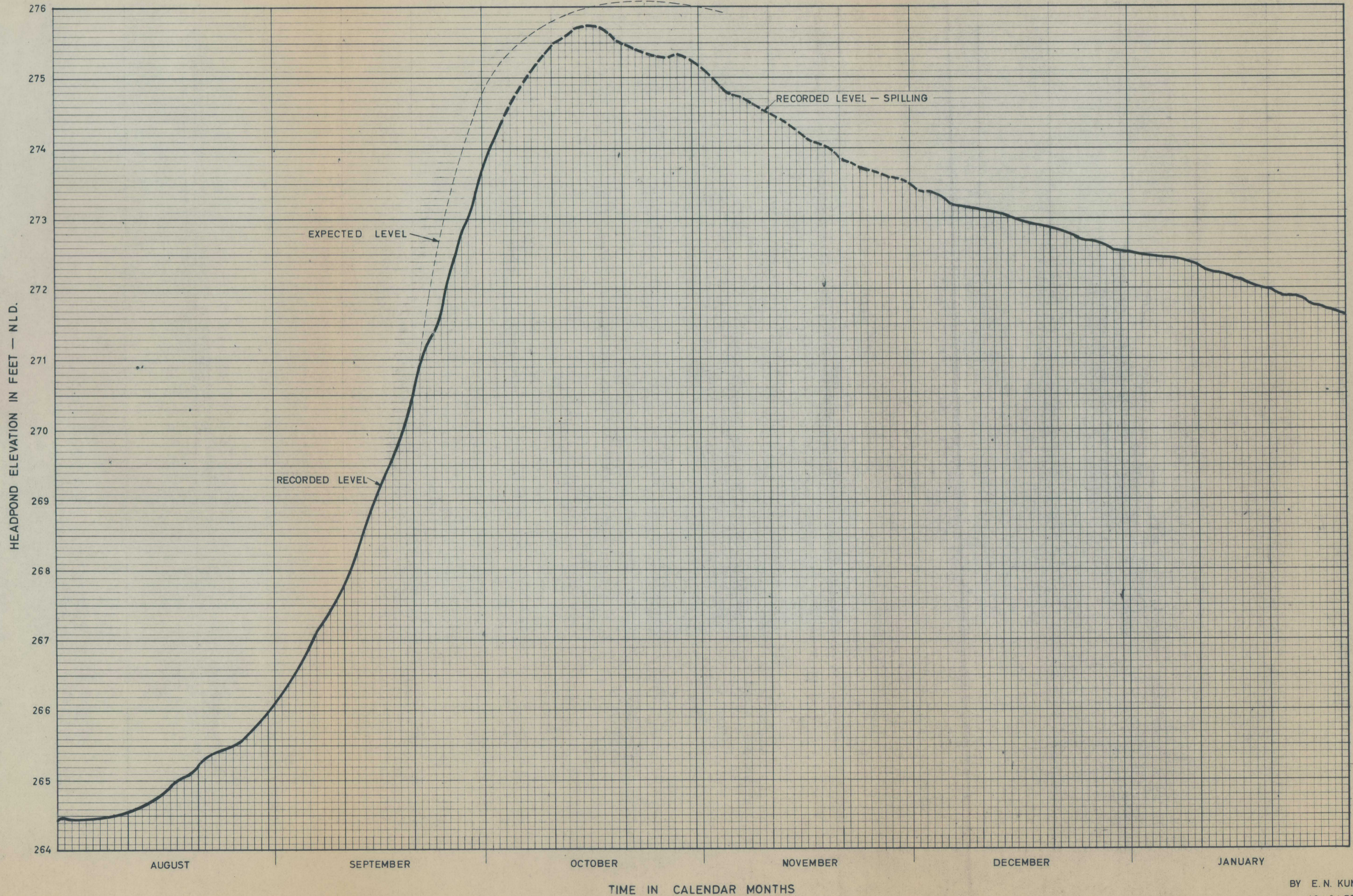


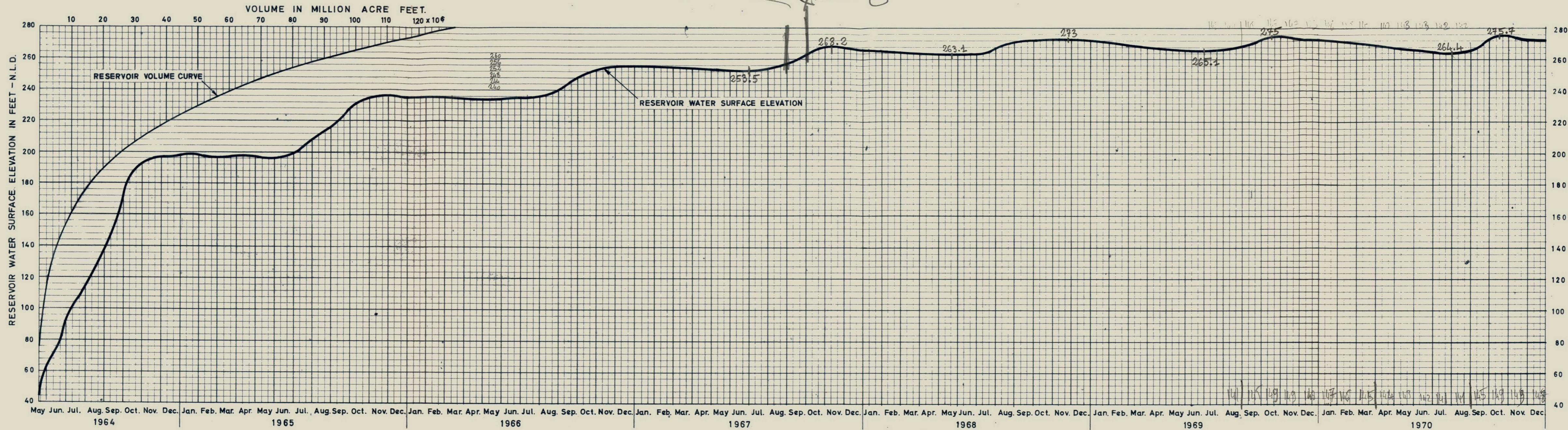
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 DECEMBER, 1969 — JULY, 1970.



BY E. W. KLINE
 Senior Civil Engineer
 8.7.70

HEADPOND CONTROL CHART — 1970 FLOOD SEASON.





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ENGINEER	
APPROVED	
CONSTRUCTION APPROVAL	

VOLTA RIVER AUTHORITY

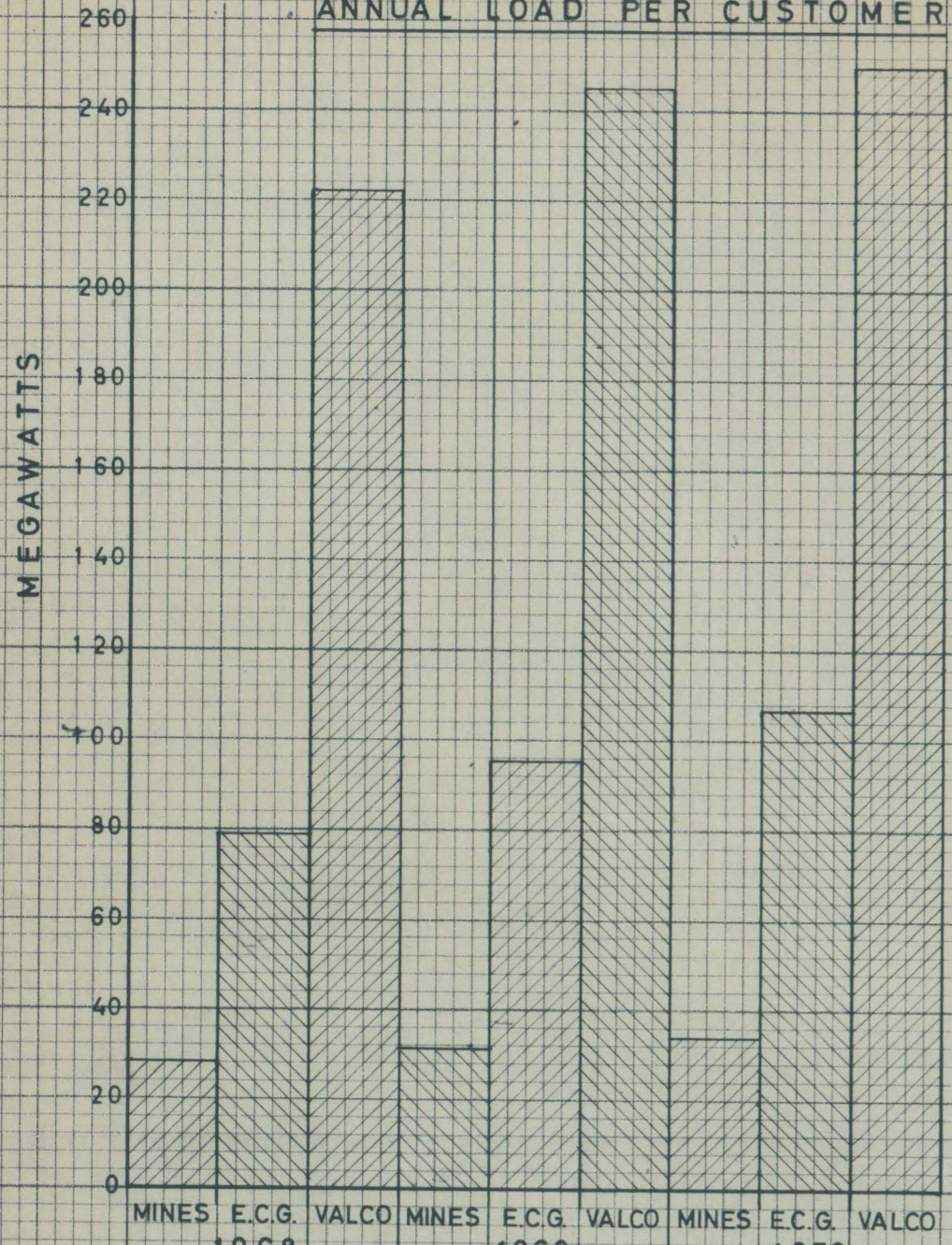
RESERVOIR FILLING CHART
 MAY, 1964 — DECEMBER, 1970

81?
65
- 96

JOB No. D-VRA/64/41 DWG. No. 9 REVISION R_

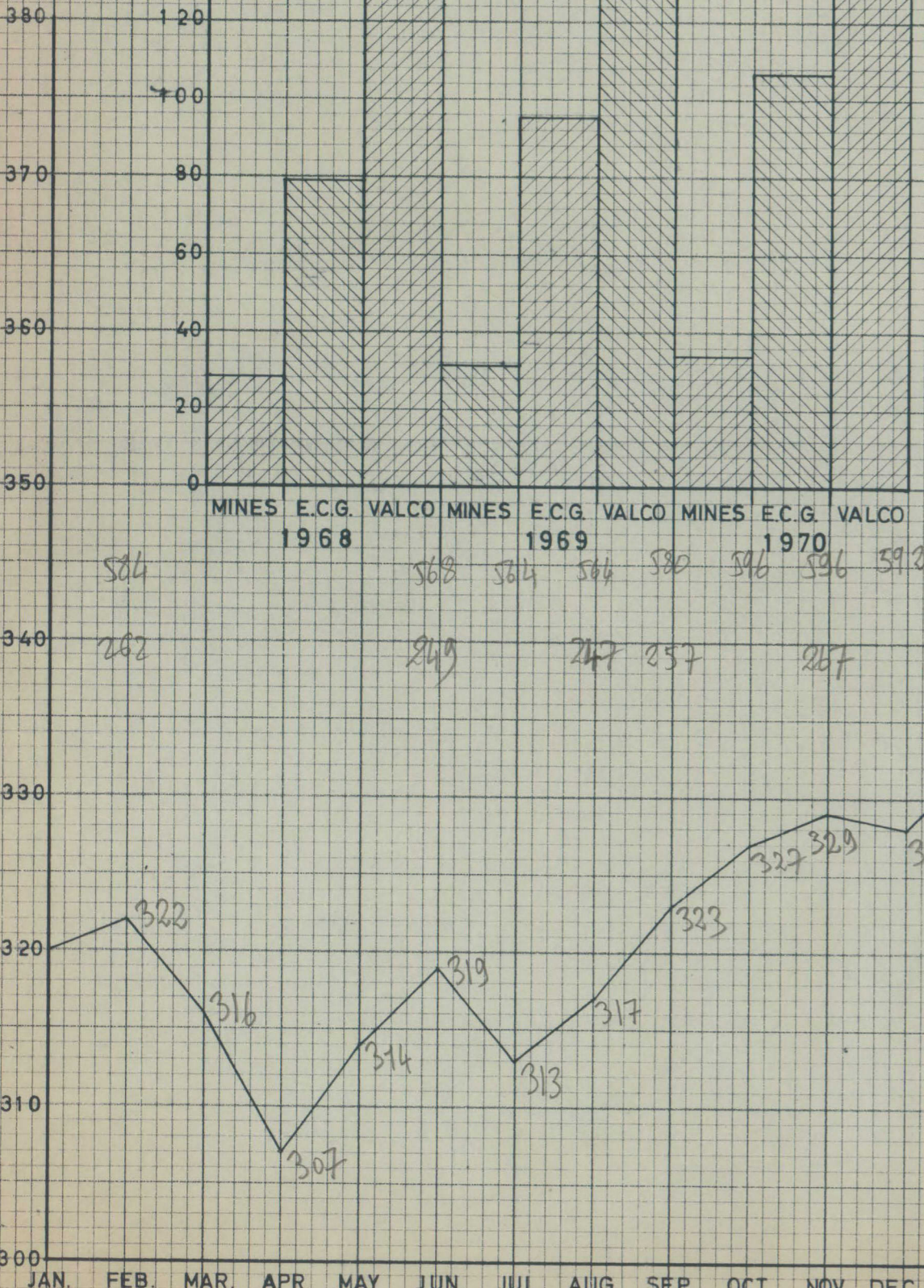
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ANNUAL LOAD PER CUSTOMER



588 584 580 576 572 568 564 584 580 596 596 592 588 584 580 576 572 568 564 564 580 596 596 592
 224 217 216 212 206 203 203 201 214 225 214 380

MEGAWATTS



SYSTEM DEMAND 1968-1970

JAN. FEB. MAR. APR. MAY JUN. JUL. AUG. SEP. OCT. NOV. DEC. 1968 1969 1970