



LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

JOHN D. LEONARD, JR.
VICE PRESIDENT - NUCLEAR OPERATIONS

August 22, 1984

SNRC-1074

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Integrated Electrical Test Data
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Dear Mr. Denton:

Enclosed please find the following documents related to the recently conducted Integrated Electrical Test (IET) at Shoreham:

- a) The introductory section of the Integrated Electrical Test Procedure (IET)
- b) Load curves for each of the four twenty (20) minute test steps conducted during the Integrated Electrical Test
- c) Summary data sheets showing voltage and KW during the one (1) minute steady state peak load period for each of the four test steps.
- d) Marked up FSAR Tables

Test results are presently undergoing review for approval by Quality Assurance and the Joint Test Group and as such the results have not been approved.

As your staff is aware, the current SNPS FSAR Tables, including the proposed changes outlined in our letter SNRC-1065, are based on design data. The enclosures in this letter represent a summation of the actual loads experienced during a LOOP/LOCA simulation for the integrated electrical test. It should be noted that these loads can be considered representative since operating plant conditions have been simulated to the maximum extent possible.

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The enclosed documents are provided for Staff information in understanding the objectives of the IET and documenting the actual diesel loads, specifically those experienced during the IET.

In providing the introductory portion of the test procedure, the purpose of the IET is outlined. Four test steps are conducted in the IET as follows:

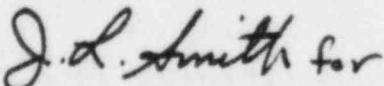
- a) One step in which all three diesels are loaded during a LOOP/LOCA event.
- b) Three steps in which one diesel is placed in "lockout" and the remaining two diesels are subjected to a LOOP/LOCA event. In each test, a different engine is placed in "lockout" so that all engine combinations are tested.

Load curves for each of the diesels showing the load profile during the steps described above are incl 'ed. In addition, tabulated data during the one (1) minute steady state peak load period is enclosed.

The primary purpose of the IET is to ensure emergency bus separation and proper loading of the diesel buses during a LOOP/LOCA event, therefore equipment loads were not actually measured, but rather, verification that the equipment had started as required, was of more concern. As such, enclosed is a marked up FSAR table identifying equipment which was known to be near the tabulated value as opposed to equipment that was known to be connected to the bus but whose load was not exactly determinable.

Should you require any further clarification of this information, please do not hesitate to contact us.

Very truly yours,



J. D. Leonard, Jr.
Vice President - Nuclear Operations

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ATTACHMENT I

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ATTACHMENT T

Attachment I
Page Two

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1.0 OBJECTIVE

The objective of the Integrated Electrical Test is to verify the existence of independence among redundant onsite power sources and their load groups. Various equipment configurations, as listed below, will be utilized to demonstrate independence during Plant response to the Loss of Coolant Accident (LOCA) with and without a Loss of Offsite Power (LOOSP). Plant equipment will be aligned for each test to demonstrate maximum response to each event while attempting to adhere to normal system lineups. Equipment response will be verified using Control Room Indication.

Test 1 - Simulated loss of coolant accident (LOCA) with offsite power available. This will demonstrate diesels start without load shedding and with the automatic initiation of Emergency Core Cooling Systems by HIGH DRYWELL PRESSURE accident signal.

SECTION 8.2

Test 2 - Loss of offsite power (LOOSP) with simultaneous simulated Loss of Coolant Accident (LOCA). This will demonstrate load shedding, diesel automatic start, bus reenergization, and sequencing of the bus loading initiated by concurrent bus undervoltage and LOW LOW LOW reactor water level accident signal.

Section 8.3

Test 3 - With orange emergency DC battery system and associated emergency AC diesel generator out of service, initiate simultaneously simulated LOCA and LOOSP conditions. This demonstrates separation of the orange DC and 103 emergency bus from the red and blue DC buses and the 101 and 102 emergency AC buses.

SECTION 8.4

Test 4 - With blue emergency DC battery system and associated emergency AC diesel generator out of service, initiate simultaneously simulated LOCA and LOOSP conditions. This demonstrates separation of the blue DC and 102 emergency bus from the red and orange DC buses and the 101 and 103 emergency AC buses.

Section 8.5

Test 5 - With the red emergency DC battery system and associated emergency AC diesel generator out of service, initiate simultaneously simulated LOCA and LOOSP conditions. This demonstrates separations of the red DC and 101 emergency bus from the blue and orange DC buses and the 102 and 103 emergency DC buses.

* LOADS GENERATED DURING INTEGRATED ELECTRICAL TEST
+ LOADS GENERATED BUT CYCLING OR ACTUAL LOAD VARYING

1.1.5.1.1.1

TABLE 2-1-1
**WINDING-KEY DIESEL GENERATOR SYSTEM
REQUIRED LOADS AND MAXIMUM COINCIDENT DEMAND**

Function	Nameplate Rating (kW)	Total Plant Number	Number Required			Maximum coincident Demand (kilowatt) DG-101	DG-102	DG-103
			Design Basis Loss of Coolant Accident	10 Min on	Offsite Power (hot standby)			
* Core Spray Pump	1250	2	1 ..	1	-	898	908	-
* Residential Heat Removal Pump	1250	4	2 ..	1	3 ..	999	999	1998 ..
* Service Water Pump	450	4	2	2	-	358	358	248-358 ..
+ RASVS and CRAC Water Chiller	282	4	2	2	-	215	235	470 ..
* RASVS and CRAC Water Chiller Liquid Oil Pump	75	4	2	2	-	0.2	0.2	0.4 ..
* RASVS Chiller Circ.	100	2	2	2	-	60	60	120 ..
Water Pumps	75	4	2	2	-	16	16	32 ..
* RASVS Chiller Cond. Water	20	4	2	2	-	96	96	-
* RASVS Unit Cooler	30	6	4	4	-	82.5	82.5	82.5 ..
* RASVS External Fan	100	2	2	2	-	-	-	-
* Reactor Building Exhaust Booster Fan	7.5	2	1	1	1	6	6	-
* ROSES Filter System Total	6.6 kW	2	1	1	1	6.6	6.6	-
* RBCLCM Circ. Pump	100	3	2	2	2	80	80	80 (4) ..
+ Diesel Generator Air Compressor	10	6	-	-	-	12	12	12 ..
+ Direct Generator Fuel Oil Transfer Pump	5	6	2	2	2	0.4	0.4	0.4 ..
Generator-Generator-Link	36.4 kW	6	-	-	-	72 ..	72 ..	72 ..
Generator-Generator-Link	2.5 kW	3	-	-	-	2.5 ..	2.5 ..	2.5 ..
Generator-Generator-Link	20 kW	3	-	-	-	20 ..	20 ..	20 ..
Hydro-Generator-Link	5	3	-	-	-	4 ..	4 ..	4 ..
Hydro-Generator-Link	4.2 kW	3	-	-	-	4.2 ..	4.2 ..	4.2 ..
Battery Charger 1125 V	60 kVA DG 101	3	2	2	2	20	25	17 ..
+ 120 V ac Instrument Power	100 kVA DG 102	3	2	2	2	80	80	80 ..
Generator-Generator-Link	50 kVA DG 101	-	-	-	-	-	-	-
+ Diesel Generator-Link	6.5 kW	-	-	-	-	-	-	5.2 ..
* Variable Rate S. Motor	20	3	2	2	2	16	16	16 ..
* Hyd. Power Plant Supply	2	3	2	2	2	1.6	1.6	1.6 ..
* Central Power Air Condition	40	2	1	1	1	31.9	31.9	-
* Central Power Ventilator Fan	7.5	2	1	1	1	6.0	6.0	-

TABLE 8.3.1-1 (CONT'D)

Function	Normal State Setting [19]	Total plantandler	Number Required	Design Basis Loss of Content Arc-heat	Loss of Offsite Power 0-10 Min on Unit Standby	Maximum Contingent Demand [kW/Unit] [UG-101]	Demand [kW/Unit] [UG-102]
Emergency Switchgear, Relay & Computer Rooms Air Funnels							
Lightning Rod	40	2	1	-	-	33.9	33.9
Fog-Air-Conditioning Units	470 kW	1	-	-	-	40***	-
+55-44-Cooled-Compressor	30 kW	1	-	-	-	30***	-
* Two gravity Switchgear, Relay & Computer Rooms Exhaust Fan	10	2	1	-	-	0.0	0.0
SC 8855 Chiller Room Exhaust Fan	3	2	1	-	-	2.4	2.4
+ Scrubber Exhaust Fan	10	2	1	-	-	0.0	0.0
Scrubwell Interposing Relay Panel	1 kVA	1	-	-	-	0.8	-
+ NTC Room Ventilation	15	2	1	-	-	0.5	0.5
+ IPCI in Set Room Ventilation	3	4	2	2	2	2.4	4.8
in Unit Center NTC OB1 Room Sprinkler Pool Cooling	1.5	1	1	1	-	1.2	-
Water Pump	30	2	1	1	-	21 min(1/s)	24 min(1/s)
+ Low Level Pump (C5, Rm. 407, GTC)	7.5	4	2	2	-	12.0	12.0
Automatic Contactor	109 kW	2	1	-	-	109***	109***
8855-44-Subtotal	6.5 kW	4	-	-	-	26.4**	-
8855-44-Bottom	4	3	-	-	-	7**	3.5**
+ Radiation Monitor Ring	1	10	-	-	-	4.8	3.2
+ Fire & Service Lighting	407.2 kW	-	-	X***	X***	180***	727.2***
Handbooks-Construction-Space Occupancy	60 kW	-	-	X***	X***	34	26
Reactor Building Light System	25	2	-	2	-	20***	20***
Building-Exterior-Exterior	25 kVA	1	-	1	-	7	20***
Handbooks-Chairman-324-M	3 kVA	4	-	-	-	2.4***	2.4***
Transformer-Electric Power	37.5 kVA	1	-	-	-	-	30
* Interchangeable Power (Specialty & Command-Callouts) - C	20 kVA	1	-	-	-	-	16
+ Nature of Chairper (Service 11V or 110V Communication Function)	20 kVA	1	-	-	-	-	4
+ Distribution-Electric Power (C-Generator Bus) - C	20 kVA	1	-	-	-	-	16
+ Control-Plant Protection-Programs	240	2	-	-	-	276.4**	276.4**
Management-Computer Systems	25	8	-	-	-	80.4*	80.4*

14000 C.F.T. (CONT'D)

Function	Nameplate Rating [kW]	Total Plant Mwatt	Number Required			Loss of Design Basis Loss of Content Accident 0.10 Min. 10 min on (100% Standby)	Offsite Power DG-101	Max Nameplate Current Demand (1100A) DG-102	Max Nameplate Current Demand (1100A) DG-101
			Design Basis Loss	Content Accident 0.10 Min.	Offsite Power (100% Standby)				
Machinery Contingent									
Water-Cooler Subcool									
Generator Water-Cleaner									
Service Pump									
Suppression-Pump-Pump									
Boil-Pump	2 kva	2	-	-	-	1	1.0 ..	1.6 ..	-
Main-Turbine-Turning-Gear									
Main-Turbine-Generator	25	1	-	-	-	1	20 ..	-	40 ..
Main-Turbine-Generator	60	1	-	-	-	1	-	40 ..	-
Exciting-Gear-Drive	0.5	1	-	-	-	1	-	0.4 ..	-
Main-Turbine-Turning-Gear	40	1	-	-	-	1	-	32 ..	-
Main-Turbine-Bearing-Gear	5	1	-	-	-	1	8 ..	8 ..	12 ..
Generator-Turbine-Turning Gear	1.5	2	-	-	-	2	1.2 ..	1.2 ..	-
Generator-Turbine-Turning Gear-Oil-Pump	10	2	-	-	-	2	1.2 ..	1.2 ..	-
Off-Site Control	1.5 kva	2	-	-	-	2	8 ..	8 ..	-
Transformer									
Standby + Stand Control Pump	40	2	-	-	-	-	32 ..	32 ..	-
Transformer	10 kva	1	-	-	-	-	-	10 ..	-
Standby+Stand Control									
Standby-Hoist	45 kW	1	-	-	-	-	45 ..	-	-
Standby+Stand Control- Hoist-Tracing	3 kva	2	-	-	-	1	3 ..	3 ..	-
Standby+Stand Control- Hoist-Tracing	25 kva	2	1	1	1	2	20	20	-
Heat Tracing Trans- former									
+ 480 V M.G. Set	200 ..	4	2	2	2	2	160	160	214
Rectifying-Off-Trans-	3.25	2	-	-	-	-	2.5 ..	2.5 ..	-
Rectifying-Platform-Assembly	3.5	1	-	-	-	-	2.8 ..	-	-
% Motor Operated Valves									
% Flanging/Drilling Engy's							19.7	18.3	0.7
Total Connectable Loads							25.9	25.3	-
Wires into 11 lines									
Wires into 8 lines									
Wires into 10 lines									
Wires into 9 lines									
Wires into 13 lines									
Total % (no concerns off-line)							110.2	102.7	10.7
Wires into 14 lines							124.8	108.2	10.7

SNPS-1-FSAR

TABLE 6.2.1-E (CONT'D)

	DG-101	DG-102	DG-103	2409-2	3364-6	3880-7
Total kW (Prior to 10 minutes)	3733.2	3348.6	3442.7	-	-	-
Minus Note 4 Loads	-0	-0	-170.2	-0	-0	-1310.2
Plus Note 14 Loads	+0	+0	+150.0	0	0	+70.0
Total kW (After 10 minutes)	3733.2	3348.6	3282.5	2409-2	3364-6	2640-9

NOTES:

- (1) Maximum coincident demand shown occurs during the 0-10 minute period after a design basis loss of coolant accident (LOCA).
- (2) Kilowatt loads given are from manufacturer's data for the CS, RIM, service water pumps, motor-generator sets, RBSVS chiller units, and all motors greater than 100 hp.
- (3) On loss of offsite power, it is necessary to go to a cold shutdown condition if DG-103 does not start, since the three required service water pumps will not be available. Note that only two service water pumps are required for a design basis LOCA condition. (Only one pump is connected automatically to DG-103, the other may be connected manually only.)
- (4) Two units are started on DG-103. One unit is shut down when it is determined which section of the system will be used.
- (5) These non-class IIE components are not required for a safe shutdown. Loading indicated for various modes of operation is desirable, although not essential. All remaining components are Class IIE.
- (6) Minimum safe shutdown requirements for a suction line break. Actual pump requirements depend on break location (see Section 6.3.3).
- (7) R indicates load required.
- (8) These loads are tripped intentionally (automatically) on a LOCA.
- (9) These loads are not normally operating and receive no automatic start signal after a LOCA.
- (10) These unsafety related loads have seal-in type control circuits that drop out on a loss of offsite power prior to connecting to the diesel generators.
- (11) These MV's are connected to their respective diesel buses but do not operate upon a LOCA.
- (12) The load to be carried by the M-G Sets consist of certain motor-operated valves. On Unit 103, one set operates at full load and one set operates unloaded.
- (13) These loads are automatically tripped when diesel generator starts.
- (14) These loads are prevented from starting until 10 minutes after a LOCA signal.
- (15) Loads imposed by battery chargers are based on the dc loading of the battery chargers.
- (16) A pump will continue to run after a LOCA.

7.2

4619,380	2821,463	4120,573	4227,817	4237,605	3932,915
4620,379	2822,462	4121,572	4228,816	4238,604	3933,914
4621,378	2823,461	4122,571	4229,815	4239,603	3934,913
4622,377	2824,460	4123,570	4230,814	4240,602	3935,912
4623,376	2825,459	4124,569	4231,813	4241,601	3936,911
4624,375	2826,458	4125,568	4232,812	4242,600	3937,910
4625,374	2827,457	4126,567	4233,811	4243,599	3938,909
4626,373	2828,456	4127,566	4234,810	4244,598	3939,908
4627,372	2829,455	4128,565	4235,809	4245,597	3940,907
4628,371	2830,454	4129,564	4236,808	4246,596	3941,906
4629,370	2831,453	4130,563	4237,807	4247,595	3942,905
4630,369	2832,452	4131,562	4238,806	4248,594	3943,904
4631,368	2833,451	4132,561	4239,805	4249,593	3944,903
4632,367	2834,450	4133,560	4240,804	4250,592	3945,902
4633,366	2835,449	4134,559	4241,803	4251,591	3946,901
4634,365	2836,448	4135,558	4242,802	4252,590	3947,900
4635,364	2837,447	4136,557	4243,801	4253,589	3948,899
4636,363	2838,446	4137,556	4244,800	4254,588	3949,898
4637,362	2839,445	4138,555	4245,799	4255,587	3950,897
4638,361	2840,444	4139,554	4246,798	4256,586	3951,896
4639,360	2841,443	4140,553	4247,797	4257,585	3952,895
4640,359	2842,442	4141,552	4248,796	4258,584	3953,894
4641,358	2843,441	4142,551	4249,795	4259,583	3954,893
4642,357	2844,440	4143,550	4250,794	4260,582	3955,892
4643,356	2845,439	4144,549	4251,793	4261,581	3956,891
4644,355	2846,438	4145,548	4252,792	4262,580	3957,890
4645,354	2847,437	4146,547	4253,791	4263,579	3958,889
4646,353	2848,436	4147,546	4254,790	4264,578	3959,888
4647,352	2849,435	4148,545	4255,789	4265,577	3960,887
4648,351	2850,434	4149,544	4256,788	4266,576	3961,886
4649,350	2851,433	4150,543	4257,787	4267,575	3962,885
4650,349	2852,432	4151,542	4258,786	4268,574	3963,884
4651,348	2853,431	4152,541	4259,785	4269,573	3964,883
4652,347	2854,430	4153,540	4260,784	4270,572	3965,882
4653,346	2855,429	4154,539	4261,783	4271,571	3966,881
4654,345	2856,428	4155,538	4262,782	4272,570	3967,880
4655,344	2857,427	4156,537	4263,781	4273,569	3968,879
4656,343	2858,426	4157,536	4264,780	4274,568	3969,878
4657,342	2859,425	4158,535	4265,779	4275,567	3970,877
4658,341	2860,424	4159,534	4266,778	4276,566	3971,876
4659,340	2861,423	4160,533	4267,777	4277,565	3972,875
4660,339	2862,422	4161,532	4268,776	4278,564	3973,874
4661,338	2863,421	4162,531	4269,775	4279,563	3974,873
4662,337	2864,420	4163,530	4270,774	4280,562	3975,872
4663,336	2865,419	4164,529	4271,773	4281,561	3976,871
4664,335	2866,418	4165,528	4272,772	4282,560	3977,870
4665,334	2867,417	4166,527	4273,771	4283,559	3978,869
4666,333	2868,416	4167,526	4274,770	4284,558	3979,868
4667,332	2869,415	4168,525	4275,769	4285,557	3980,867
4668,331	2870,414	4169,524	4276,768	4286,556	3981,866
4669,330	2871,413	4170,523	4277,767	4287,555	3982,865
4670,329	2872,412	4171,522	4278,766	4288,554	3983,864
4671,328	2873,411	4172,521	4279,765	4289,553	3984,863
4672,327	2874,410	4173,520	4280,764	4290,552	3985,862
4673,326	2875,409	4174,519	4281,763	4291,551	3986,861
4674,325	2876,408	4175,518	4282,762	4292,550	3987,860
4675,324	2877,407	4176,517	4283,761	4293,549	3988,859
4676,323	2878,406	4177,516	4284,760	4294,548	3989,858
4677,322	2879,405	4178,515	4285,759	4295,547	3990,857
4678,321	2880,404	4179,514	4286,758	4296,546	3991,856
4679,320	2881,403	4180,513	4287,757	4297,545	3992,855
4680,319	2882,402	4181,512	4288,756	4298,544	3993,854
4681,318	2883,401	4182,511	4289,755	4299,543	3994,853
4682,317	2884,400	4183,510	4290,754	4300,542	3995,852
4683,316	2885,399	4184,509	4291,753	4301,541	3996,851
4684,315	2886,398	4185,508	4292,752	4302,540	3997,850
4685,314	2887,397	4186,507	4293,751	4303,539	3998,849
4686,313	2888,396	4187,506	4294,750	4304,538	3999,848
4687,312	2889,395	4188,505	4295,749	4305,537	4000,847
4688,311	2890,394	4189,504	4296,748	4306,536	4001,846
4689,310	2891,393	4190,503	4297,747	4307,535	4002,845
4690,309	2892,392	4191,502	4298,746	4308,534	4003,844
4691,308	2893,391	4192,501	4299,745	4309,533	4004,843
4692,307	2894,390	4193,500	4300,744	4310,532	4005,842
4693,306	2895,389	4194,499	4301,743	4311,531	4006,841
4694,305	2896,388	4195,498	4302,742	4312,530	4007,840
4695,304	2897,387	4196,497	4303,741	4313,529	4008,839
4696,303	2898,386	4197,496	4304,740	4314,528	4009,838
4697,302	2899,385	4198,495	4305,739	4315,527	4010,837
4698,301	2900,384	4199,494	4306,738	4316,526	4011,836
4699,300	2901,383	4200,493	4307,737	4317,525	4012,835
4700,299	2902,382	4201,492	4308,736	4318,524	4013,834
4701,298	2903,381	4202,491	4309,735	4319,523	4014,833
4702,297	2904,380	4203,490	4310,734	4320,522	4015,832
4703,296	2905,379	4204,489	4311,733	4321,521	4016,831
4704,295	2906,378	4205,488	4312,732	4322,520	4017,830
4705,294	2907,377	4206,487	4313,731	4323,519	4018,829
4706,293	2908,376	4207,486	4314,730	4324,518	4019,828
4707,292	2909,375	4208,485	4315,729	4325,517	4020,827
4708,291	2910,374	4209,484	4316,728	4326,516	4021,826
4709,290	2911,373	4210,483	4317,727	4327,515	4022,825
4710,289	2912,372	4211,482	4318,726	4328,514	4023,824
4711,288	2913,371	4212,481	4319,725	4329,513	4024,823
4712,287	2914,370	4213,480	4320,724	4330,512	4025,822
4713,286	2915,369	4214,479	4321,723	4331,511	4026,821
4714,285	2916,368	4215,478	4322,722	4332,510	4027,820
4715,284	2917,367	4216,477	4323,721	4333,509	4028,819
4716,283	2918,366	4217,476	4324,720	4334,508	4029,818
4717,282	2919,365	4218,475	4325,719	4335,507	4030,817
4718,281	2920,364	4219,474	4326,718	4336,506	4031,816
4719,280	2921,363	4220,473	4327,717	4337,505	4032,815
4720,279	2922,362	4221,472	4328,716	4338,504	4033,814
4721,278	2923,361	4222,471	4329,715	4339,503	4034,813
4722,277	2924,360	4223,470	4330,714	4340,502	4035,812
4723,276	2925,359	4224,469	4331,713	4341,501	4036,811
4724,275	2926,358	4225,468	4332,712	4342,500	4037,810
4725,274	2927,357	4226,467	4333,711	4343,499	4038,809
4726,273	2928,356	4227,466	4334,710	4344,498	4039,808
4727,272	2929,355	4228,465	4335,709	4345,497	4040,807
4728,271	2930,354	4229,464	4336,708	4346,496	4041,806
4729,270	2931,353	4230,463	4337,707	4347,495	4042,805
4730,269	2932,352	4231,462	4338,706	4348,494	4043,804
4731,268	2933,351	4232,461	4339,705	4349,493	4044,803
4732,267	2934,350	4233,460	4340,704	4350,492	4045,802
4733,266	2935,349	4234,459	4341,703	4351,491	4046,801
4734,265	2936,348	4235,458	4342,702	4352,490	4047,800
4735,264	2937,347	4236,457	4343,701	4353,489	4048,799
4736,263	2938,346	4237,456	4344,700	4354,488	4049,798
4737,262	2939,345	4238,455	4345,699	4355,487	4050,797
4738,261	2940,344	4239,454	4346,698	4356,486	4051,796
4739,260	2941,343	4240,453	4347,697	4357,485	4052,795
4740,259	2942,342	4241,452	4348,696	4358,484	4053,794
4741,258	2943,341	4242,451	4349,695	4359,483	4054,793
4742,257	2944,340	4243,450	4350,694	4360,482	4055,792
4743,256	2945,339	4244,449	4351,693	4361,481	4056,791
4744,255	2946,338	4245,448	4352,692	4362,480	4057,790
4745,254	2947,337	4246,447	4353,691	4363,479	4058,789
4746,253	2948,336	4247,446	4354,690	4364,478	4059,788
4747,252	2949,335	4248,445	4355,689	4365,477	4060,787
4748,251	2950,334	4249,444	4356,688	4366,476	4061,786
4749,250	2951,333	4250,443	4357,687	4367,475	4062,785
4750,249	2952,332	4251,442	4358,686	4368,474	4063,784
4751,248	2953,331	4252,441	4359,685	4369,473	4064,783
4752,247	2954,330</td				

Year	Population	Area (km²)	Density (people/km²)
2000	2,000,000	2,000	1,000
2005	2,200,000	2,200	1,000
2010	2,400,000	2,400	1,000
2015	2,600,000	2,600	1,000
2020	2,800,000	2,800	1,000
2025	3,000,000	3,000	1,000
2030	3,200,000	3,200	1,000
2035	3,400,000	3,400	1,000
2040	3,600,000	3,600	1,000
2045	3,800,000	3,800	1,000
2050	4,000,000	4,000	1,000
2055	4,200,000	4,200	1,000
2060	4,400,000	4,400	1,000
2065	4,600,000	4,600	1,000
2070	4,800,000	4,800	1,000
2075	5,000,000	5,000	1,000
2080	5,200,000	5,200	1,000
2085	5,400,000	5,400	1,000
2090	5,600,000	5,600	1,000
2095	5,800,000	5,800	1,000
2100	6,000,000	6,000	1,000
2105	6,200,000	6,200	1,000
2110	6,400,000	6,400	1,000
2115	6,600,000	6,600	1,000
2120	6,800,000	6,800	1,000
2125	7,000,000	7,000	1,000
2130	7,200,000	7,200	1,000
2135	7,400,000	7,400	1,000
2140	7,600,000	7,600	1,000
2145	7,800,000	7,800	1,000
2150	8,000,000	8,000	1,000
2155	8,200,000	8,200	1,000
2160	8,400,000	8,400	1,000
2165	8,600,000	8,600	1,000
2170	8,800,000	8,800	1,000
2175	9,000,000	9,000	1,000
2180	9,200,000	9,200	1,000
2185	9,400,000	9,400	1,000
2190	9,600,000	9,600	1,000
2195	9,800,000	9,800	1,000
2200	10,000,000	10,000	1,000
2205	10,200,000	10,200	1,000
2210	10,400,000	10,400	1,000
2215	10,600,000	10,600	1,000
2220	10,800,000	10,800	1,000
2225	11,000,000	11,000	1,000
2230	11,200,000	11,200	1,000
2235	11,400,000	11,400	1,000
2240	11,600,000	11,600	1,000
2245	11,800,000	11,800	1,000
2250	12,000,000	12,000	1,000
2255	12,200,000	12,200	1,000
2260	12,400,000	12,400	1,000
2265	12,600,000	12,600	1,000
2270	12,800,000	12,800	1,000
2275	13,000,000	13,000	1,000
2280	13,200,000	13,200	1,000
2285	13,400,000	13,400	1,000
2290	13,600,000	13,600	1,000
2295	13,800,000	13,800	1,000
2300	14,000,000	14,000	1,000
2305	14,200,000	14,200	1,000
2310	14,400,000	14,400	1,000
2315	14,600,000	14,600	1,000
2320	14,800,000	14,800	1,000
2325	15,000,000	15,000	1,000
2330	15,200,000	15,200	1,000
2335	15,400,000	15,400	1,000
2340	15,600,000	15,600	1,000
2345	15,800,000	15,800	1,000
2350	16,000,000	16,000	1,000
2355	16,200,000	16,200	1,000
2360	16,400,000	16,400	1,000
2365	16,600,000	16,600	1,000
2370	16,800,000	16,800	1,000
2375	17,000,000	17,000	1,000
2380	17,200,000	17,200	1,000
2385	17,400,000	17,400	1,000
2390	17,600,000	17,600	1,000
2395	17,800,000	17,800	1,000
2400	18,000,000	18,000	1,000
2405	18,200,000	18,200	1,000
2410	18,400,000	18,400	1,000
2415	18,600,000	18,600	1,000
2420	18,800,000	18,800	1,000
2425	19,000,000	19,000	1,000
2430	19,200,000	19,200	1,000
2435	19,400,000	19,400	1,000
2440	19,600,000	19,600	1,000
2445	19,800,000	19,800	1,000
2450	20,000,000	20,000	1,000
2455	20,200,000	20,200	1,000
2460	20,400,000	20,400	1,000
2465	20,600,000	20,600	1,000
2470	20,800,000	20,800	1,000
2475	21,000,000	21,000	1,000
2480	21,200,000	21,200	1,000
2485	21,400,000	21,400	1,000
2490	21,600,000	21,600	1,000
2495	21,800,000	21,800	1,000
2500	22,000,000	22,000	1,000
2505	22,200,000	22,200	1,000
2510	22,400,000	22,400	1,000
2515	22,600,000	22,600	1,000
2520	22,800,000	22,800	1,000
2525	23,000,000	23,000	1,000
2530	23,200,000	23,200	1,000
2535	23,400,000	23,400	1,000
2540	23,600,000	23,600	1,000
2545	23,800,000	23,800	1,000
2550	24,000,000	24,000	1,000
2555	24,200,000	24,200	1,000
2560	24,400,000	24,400	1,000
2565	24,600,000	24,600	1,000
2570	24,800,000	24,800	1,000
2575	25,000,000	25,000	1,000
2580	25,200,000	25,200	1,000
2585	25,400,000	25,400	1,000
2590	25,600,000	25,600	1,000
2595	25,800,000	25,800	1,000
2600	26,000,000	26,000	1,000
2605	26,200,000	26,200	1,000
2610	26,400,000	26,400	1,000
2615	26,600,000	26,600	1,000
2620	26,800,000	26,800	1,000
2625	27,000,000	27,000	1,000
2630	27,200,000	27,200	1,000
2635	27,400,000	27,400	1,000
2640	27,600,000	27,600	1,000
2645	27,800,000	27,800	1,000
2650	28,000,000	28,000	1,000
2655	28,200,000	28,200	1,000
2660	28,400,000	28,400	1,000
2665	28,600,000	28,600	1,000
2670	28,800,000	28,800	1,000
2675	29,000,000	29,000	1,000
2680	29,200,000	29,200	1,000
2685	29,400,000	29,400	1,000
2690	29,600,000	29,600	1,000
2695	29,800,000	29,800	1,000
2700	30,000,000	30,000	1,000
2705	30,200,000	30,200	1,000
2710	30,400,000	30,400	1,000
2715	30,600,000	30,600	1,000
2720	30,800,000	30,800	1,000
2725	31,000,000	31,000	1,000
2730	31,200,000	31,200	1,000
2735	31,400,000	31,400	1,000
2740	31,600,000	31,600	1,000
2745	31,800,000	31,800	1,000
2750	32,000,000	32,000	1,000
2755	32,200,000	32,200	1,000
2760	32,400,000	32,400	1,000
2765	32,600,000	32,600	1,000
2770	32,800,000	32,800	1,000
2775	33,000,000	33,000	1,000
2780	33,200,000	33,200	1,000
2785	33,400,000	33,400	1,000
2790	33,600,000	33,600	1,000
2795	33,800,000	33,800	1,000
2800	34,000,000	34,000	1,000
2805	34,200,000	34,200	1,000
2810	34,400,000	34,400	1,000
2815	34,600,000	34,600	1,000
2820	34,800,000	34,800	1,000
2825	35,000,000	35,000	1,000
2830	35,200,000	35,200	1,000
2835	35,400,000	35,400	1,000
2840	35,600,000	35,600	1,000
2845	35,800,000	35,800	1,000
2850	36,000,000	36,000	1,000
2855	36,200,000	36,200	1,000
2860	36,400,000	36,400	1,000
2865	36,600,000	36,600	1,000
2870	36,800,000	36,800	1,000
2875	37,000,000	37,000	1,000
2880	37,200,000	37,200	1,000
2885	37,400,000	37,400	1,000
2890	37,600,000	37,600	1,000
2895	37,800,000	37,800	1,000
2900	38,000,000	38,000	1,000
2905	38,200,000	38,200	1,000
2910	38,400,000	38,400	1,000
2915	38,600,000	38,600	1,000
2920	38,800,000	38,800	1,000
2925	39,000,000	39,000	1,000
2930	39,200,000	39,200	1,000
2935	39,400,000	39,400	1,000
2940	39,600,000	39,600	1,000
2945	39,800,000	39,800	1,000
2950	40,000,000	40,000	1,000
2955	40,200,000	40,200	1,000
2960	40,400,000	40,400	1,000
2965	40,600,000	40,600	1,000
2970	40,800,000	40,800	1,000
2975	41,000,000	41,000	1,000
2980	41,200,000	41,200	1,000
2985	41,400,000	41,400	1,000
2990	41,600,000	41,600	1,000
2995	41,800,000	41,800	1,000
3000	42,000,000	42,000	1,000
3005	42,200,000	42,200	1,000
3010	42,400,000	42,400	1,000
3015	42,600,000	42,600	1,000
3020	42,800,000	42,800	1,000
3025	43,000,000	43,000	1,000
3030	43,200,000	43,200	1,000
3035	43,400,000	43,400	1,000
3040	43,600,000	43,600	1,000
3045	43,800,000	43,800	1,000
3050	44,000,000	44,000	1,000
3055	44,200,000	44,200	1,000
3060	44,400,000	44,400	1,000
3065	44,600,000	44,600	1,000
3070	44,800,000	44,800	1,000
3075	45,000,000	45,000	1,000
3080	45,200,000	45,200	1,000
3085	45,400,000	45,400	1,000
3090	45,600,000	45,600	1,000
3095	45,800,000	45,800	1,000
3100	46,000,000	46,000	1,000
3105	46,200,000	46,200	1,000
3110	46,400,000	46,400	1,000
3115	46,600,000	46,600	1,000
3120	46,800,000	46,800	1,000</

8.2

8.2

RELATIVE TIME	TIME	DEPTH	RELATIVE TIME	TIME	DEPTH
0.04-0.53	2007-2008	2000	0.04-0.53	2007-2008	2000
0.05-0.54	2008-2009	1900	0.05-0.54	2008-2009	1900
0.06-0.55	2009-2010	1800	0.06-0.55	2009-2010	1800
0.07-0.56	2010-2011	1700	0.07-0.56	2010-2011	1700
0.08-0.57	2011-2012	1600	0.08-0.57	2011-2012	1600
0.09-0.58	2012-2013	1500	0.09-0.58	2012-2013	1500
0.10-0.59	2013-2014	1400	0.10-0.59	2013-2014	1400
0.11-0.60	2014-2015	1300	0.11-0.60	2014-2015	1300
0.12-0.61	2015-2016	1200	0.12-0.61	2015-2016	1200
0.13-0.62	2016-2017	1100	0.13-0.62	2016-2017	1100
0.14-0.63	2017-2018	1000	0.14-0.63	2017-2018	1000
0.15-0.64	2018-2019	900	0.15-0.64	2018-2019	900
0.16-0.65	2019-2020	800	0.16-0.65	2019-2020	800
0.17-0.66	2020-2021	700	0.17-0.66	2020-2021	700
0.18-0.67	2021-2022	600	0.18-0.67	2021-2022	600
0.19-0.68	2022-2023	500	0.19-0.68	2022-2023	500
0.20-0.69	2023-2024	400	0.20-0.69	2023-2024	400
0.21-0.70	2024-2025	300	0.21-0.70	2024-2025	300
0.22-0.71	2025-2026	200	0.22-0.71	2025-2026	200
0.23-0.72	2026-2027	100	0.23-0.72	2026-2027	100
0.24-0.73	2027-2028	0	0.24-0.73	2027-2028	0

8.2

Year	Population (in millions)
1950	2.5
1960	3.0
1970	3.5
1980	4.0
1990	4.5
2000	5.0
2010	5.5
2020	6.0
2030	6.5
2040	7.0
2050	7.5
2060	8.0
2070	8.5
2080	9.0
2090	9.5
2100	10.0

Year	Country	Population	Yield	Production
1950	China	550,000,000	1.5	825,000,000
1960	China	700,000,000	2.0	1,400,000,000
1970	China	900,000,000	2.5	2,250,000,000
1980	China	1,100,000,000	3.0	3,300,000,000
1990	China	1,300,000,000	3.5	4,550,000,000
2000	China	1,500,000,000	4.0	6,000,000,000
2010	China	1,600,000,000	4.5	7,200,000,000
2020	China	1,700,000,000	5.0	8,500,000,000
2030	China	1,800,000,000	5.5	9,900,000,000
2040	China	1,900,000,000	6.0	11,400,000,000
2050	China	2,000,000,000	6.5	12,500,000,000
2060	China	2,100,000,000	7.0	14,700,000,000
2070	China	2,200,000,000	7.5	16,500,000,000
2080	China	2,300,000,000	8.0	18,400,000,000
2090	China	2,400,000,000	8.5	20,400,000,000
2100	China	2,500,000,000	9.0	22,500,000,000
1950	India	350,000,000	1.0	350,000,000
1960	India	450,000,000	1.2	540,000,000
1970	India	550,000,000	1.5	825,000,000
1980	India	650,000,000	1.8	1,170,000,000
1990	India	750,000,000	2.2	1,650,000,000
2000	India	850,000,000	2.5	2,125,000,000
2010	India	950,000,000	3.0	2,850,000,000
2020	India	1,050,000,000	3.5	3,675,000,000
2030	India	1,150,000,000	4.0	4,600,000,000
2040	India	1,250,000,000	4.5	5,525,000,000
2050	India	1,350,000,000	5.0	6,450,000,000
2060	India	1,450,000,000	5.5	7,375,000,000
2070	India	1,550,000,000	6.0	8,300,000,000
2080	India	1,650,000,000	6.5	9,225,000,000
2090	India	1,750,000,000	7.0	10,150,000,000
2100	India	1,850,000,000	7.5	11,075,000,000
1950	United States	150,000,000	2.5	375,000,000
1960	United States	170,000,000	2.8	476,000,000
1970	United States	190,000,000	3.2	608,000,000
1980	United States	210,000,000	3.6	756,000,000
1990	United States	230,000,000	4.0	920,000,000
2000	United States	250,000,000	4.4	1,090,000,000
2010	United States	270,000,000	4.8	1,276,000,000
2020	United States	290,000,000	5.2	1,464,000,000
2030	United States	310,000,000	5.6	1,656,000,000
2040	United States	330,000,000	6.0	1,852,000,000
2050	United States	350,000,000	6.4	1,952,000,000
2060	United States	370,000,000	6.8	2,056,000,000
2070	United States	390,000,000	7.2	2,164,000,000
2080	United States	410,000,000	7.6	2,276,000,000
2090	United States	430,000,000	8.0	2,392,000,000
2100	United States	450,000,000	8.4	2,512,000,000
1950	United Kingdom	45,000,000	2.0	90,000,000
1960	United Kingdom	48,000,000	2.2	105,600,000
1970	United Kingdom	51,000,000	2.5	127,500,000
1980	United Kingdom	54,000,000	2.8	151,200,000
1990	United Kingdom	57,000,000	3.2	178,400,000
2000	United Kingdom	60,000,000	3.6	216,000,000
2010	United Kingdom	63,000,000	4.0	253,200,000
2020	United Kingdom	66,000,000	4.4	290,400,000
2030	United Kingdom	69,000,000	4.8	327,600,000
2040	United Kingdom	72,000,000	5.2	364,800,000
2050	United Kingdom	75,000,000	5.6	402,000,000
2060	United Kingdom	78,000,000	6.0	439,200,000
2070	United Kingdom	81,000,000	6.4	476,400,000
2080	United Kingdom	84,000,000	6.8	513,600,000
2090	United Kingdom	87,000,000	7.2	550,800,000
2100	United Kingdom	90,000,000	7.6	588,000,000
1950	Germany	40,000,000	2.0	80,000,000
1960	Germany	43,000,000	2.2	94,300,000
1970	Germany	46,000,000	2.5	115,000,000
1980	Germany	49,000,000	2.8	137,200,000
1990	Germany	52,000,000	3.2	166,400,000
2000	Germany	55,000,000	3.6	198,000,000
2010	Germany	58,000,000	4.0	232,800,000
2020	Germany	61,000,000	4.4	267,600,000
2030	Germany	64,000,000	4.8	302,400,000
2040	Germany	67,000,000	5.2	337,200,000
2050	Germany	70,000,000	5.6	372,000,000
2060	Germany	73,000,000	6.0	406,800,000
2070	Germany	76,000,000	6.4	441,600,000
2080	Germany	79,000,000	6.8	476,400,000
2090	Germany	82,000,000	7.2	511,200,000
2100	Germany	85,000,000	7.6	546,000,000
1950	France	35,000,000	2.0	70,000,000
1960	France	38,000,000	2.2	83,600,000
1970	France	41,000,000	2.5	102,500,000
1980	France	44,000,000	2.8	123,200,000
1990	France	47,000,000	3.2	148,400,000
2000	France	50,000,000	3.6	176,000,000
2010	France	53,000,000	4.0	202,400,000
2020	France	56,000,000	4.4	230,400,000
2030	France	59,000,000	4.8	258,400,000
2040	France	62,000,000	5.2	286,400,000
2050	France	65,000,000	5.6	314,400,000
2060	France	68,000,000	6.0	342,400,000
2070	France	71,000,000	6.4	370,400,000
2080	France	74,000,000	6.8	408,400,000
2090	France	77,000,000	7.2	446,400,000
2100	France	80,000,000	7.6	484,000,000
1950	Japan	60,000,000	2.0	120,000,000
1960	Japan	63,000,000	2.2	134,300,000
1970	Japan	66,000,000	2.5	165,000,000
1980	Japan	69,000,000	2.8	193,200,000
1990	Japan	72,000,000	3.2	226,400,000
2000	Japan	75,000,000	3.6	259,000,000
2010	Japan	78,000,000	4.0	291,200,000
2020	Japan	81,000,000	4.4	323,600,000
2030	Japan	84,000,000	4.8	355,200,000
2040	Japan	87,000,000	5.2	387,600,000
2050	Japan	90,000,000	5.6	419,200,000
2060	Japan	93,000,000	6.0	451,600,000
2070	Japan	96,000,000	6.4	484,000,000
2080	Japan	99,000,000	6.8	516,400,000
2090	Japan	102,000,000	7.2	548,800,000
2100	Japan	105,000,000	7.6	581,200,000
1950	Canada	10,000,000	2.0	20,000,000
1960	Canada	11,000,000	2.2	24,200,000
1970	Canada	12,000,000	2.5	30,000,000
1980	Canada	13,000,000	2.8	36,400,000
1990	Canada	14,000,000	3.2	44,800,000
2000	Canada	15,000,000	3.6	53,600,000
2010	Canada	16,000,000	4.0	62,400,000
2020	Canada	17,000,000	4.4	71,200,000
2030	Canada	18,000,000	4.8	80,000,000
2040	Canada	19,000,000	5.2	88,800,000
2050	Canada	20,000,000	5.6	97,600,000
2060	Canada	21,000,000	6.0	106,400,000
2070	Canada	22,000,000	6.4	115,200,000
2080	Canada	23,000,000	6.8	124,000,000
2090	Canada	24,000,000	7.2	132,800,000
2100	Canada	25,000,000	7.6	141,600,000
1950	Australia	6,000,000	2.0	12,000,000
1960	Australia	6,500,000	2.2	14,300,000
1970	Australia	7,000,000	2.5	17,500,000
1980	Australia	7,500,000	2.8	21,000,000
1990	Australia	8,000,000	3.2	25,600,000
2000	Australia	8,500,000	3.6	30,600,000
2010	Australia	9,000,000	4.0	36,000,000
2020	Australia	9,500,000	4.4	41,400,000
2030	Australia	10,000,000	4.8	46,800,000
2040	Australia	10,500,000	5.2	52,200,000
2050	Australia	11,000,000	5.6	57,600,000
2060	Australia	11,500,000	6.0	63,000,000
2070	Australia	12,000,000	6.4	68,400,000
2080	Australia	12,500,000	6.8	73,800,000
2090	Australia	13,000,000	7.2	79,200,000
2100	Australia	13,500,000	7.6	84,600,000
1950	New Zealand	2,000,000	2.0	4,000,000
1960	New Zealand	2,200,000	2.2	4,440,000
1970	New Zealand	2,400,000	2.5	5,760,000
1980	New Zealand	2,600,000	2.8	7,280,000
1990	New Zealand	2,800,000	3.2	8,960,000
2000	New Zealand	3,000,000	3.6	10,800,000
2010	New Zealand	3,200,000	4.0	12,640,000
2020	New Zealand	3,400,000	4.4	14,560,000
2030	New Zealand	3,600,000	4.8	16,480,000
2040	New Zealand	3,800,000	5.2	18,400,000
2050	New Zealand	4,000,000	5.6	20,320,000
2060	New Zealand	4,200,000	6.0	22,240,000
2070	New Zealand	4,400,000	6.4	24,160,000
2080	New Zealand	4,600,000	6.8	26,080,000
2090	New Zealand	4,800,000	7.2	27,920,000
2100	New Zealand	5,000,000	7.6	29,800,000
1950	Ireland	3,000,000	2.0	6,000,000
1960	Ireland	3,200,000	2.2	6,880,000
1970	Ireland	3,400,000	2.5	8,560,000
1980	Ireland	3,600,000	2.8	10,240,000
1990	Ireland	3,800,000	3.2	12,080,000
2000	Ireland	4,000,000	3.6	14,000,000
2010	Ireland	4,200,000	4.0	16,080,000
2020	Ireland	4,400,000	4.4	18,160,000
2030	Ireland	4,600,000	4.8	20,240,000
2040	Ireland	4,800,000	5.2	22,320,000
2050	Ireland	5,000,000	5.6	24,400,000
2060	Ireland	5,200,000	6.0	26,480,000
2070	Ireland	5,400,000	6.4	28,560,000
2080	Ireland	5,600,000	6.8	30,640,000
2090	Ireland	5,800,000	7.2	32,720,000
2100	Ireland	6,000,000	7.6	34,800,000
1950	Northern Ireland	1,000,000	2.0	2,000,000
1960	Northern Ireland	1,100,000	2.2	2,310,000
1970	Northern Ireland	1,200,000	2.5	2,700,000
1980	Northern Ireland	1,300,000	2.8	3,240,000
1990	Northern Ireland	1,400,000	3.2	3,840,000
2000	Northern Ireland	1,500,000	3.6	4,440,000
2010	Northern Ireland	1,600,000	4.0	5,040,000
2020	Northern Ireland	1,700,000	4.4	5,640,000
2030	Northern Ireland	1,800,000	4.8	6,240,000
2040	Northern Ireland	1,900,000	5.2	6,840,000
2				

8.2

RELATIVE TIME																																																		
0	2000, 350	4000, 500	6000, 650	8000, 800	10000, 950	12000, 1100	14000, 1250	16000, 1400	18000, 1550	20000, 1700	22000, 1850	24000, 2000	26000, 2150	28000, 2300	30000, 2450	32000, 2600	34000, 2750	36000, 2900	38000, 3050	40000, 3200	42000, 3350	44000, 3500	46000, 3650	48000, 3800	50000, 3950	52000, 4100	54000, 4250	56000, 4400	58000, 4550	60000, 4700	62000, 4850	64000, 5000	66000, 5150	68000, 5300	70000, 5450	72000, 5600	74000, 5750	76000, 5900	78000, 6050	80000, 6200	82000, 6350	84000, 6500	86000, 6650	88000, 6800	90000, 6950	92000, 7100	94000, 7250	96000, 7400	98000, 7550	100000, 7700

8.2

CHP-LINE PLOT
FILE NO.
REC. # 1
DATE 0/15/64

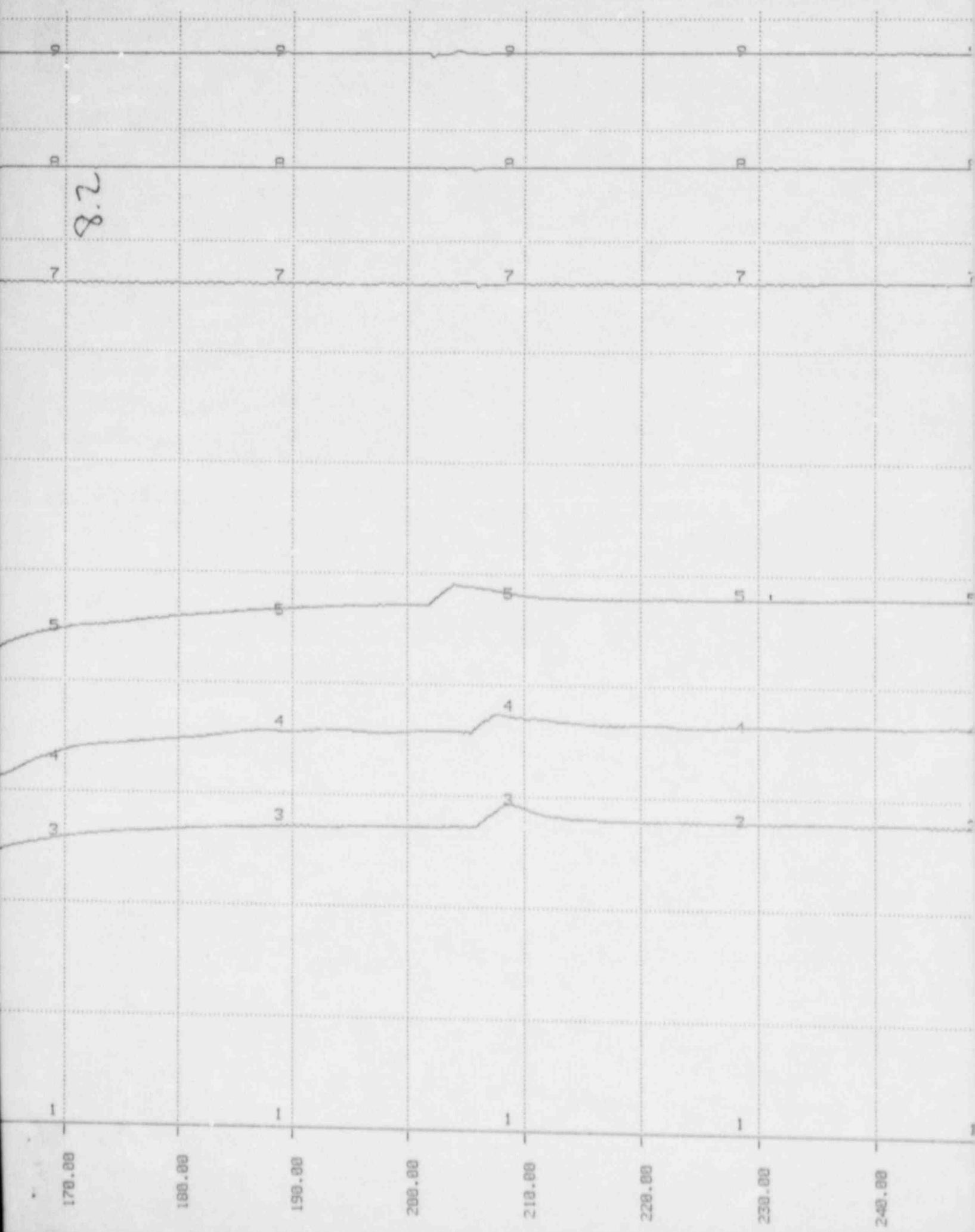
THE 0 START OF RUN 210, 00 SEC. FROM START OF RUN
TESTING AT 110.00 SECS.

10. 00SEC./GRID LINE

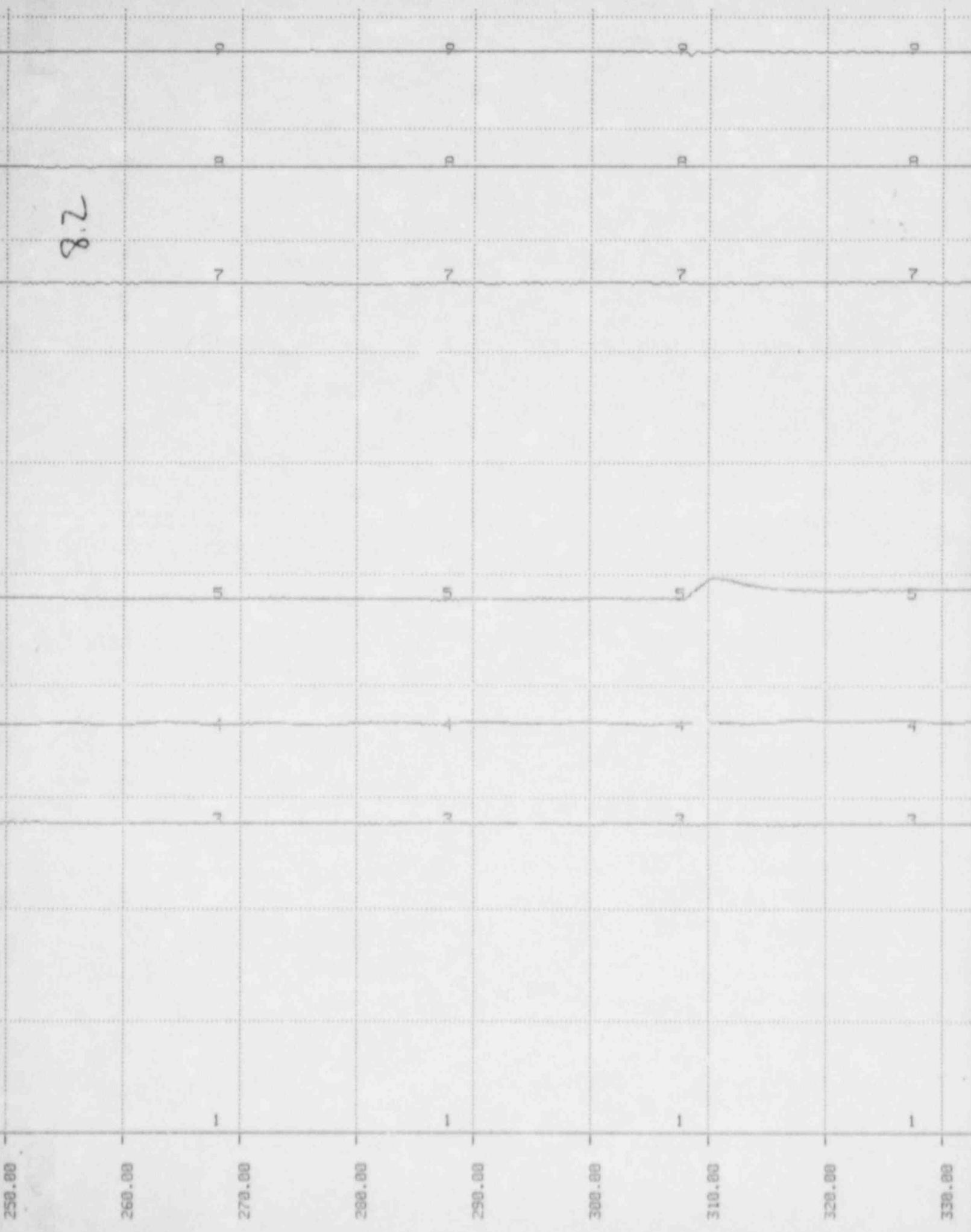
CHAN#	214	202	CHAN#	212	CHAN#	207	CHAN#	210
LOCA	INT	DG101KU	DG102KU	KU	VAC	VAC	VAC	DG103VLT
VOLT	110.0	KU	KU	KU	2500.0	2500.0	2500.0	VAC
EU	10.0	EU	1000.0	EU	EU	EU	EU	2500.0
OFF	0.0	OFF	2000.0	OFF	OFF	OFF	OFF	0.0
ORG.	1.	ORG.	3.	ORG.	4.	ORG.	5.	ORG.
110.00								



8.2



8.2



8.2

340.00

350.00

360.00

370.00

380.00

390.00

400.00

410.00

0

0

0

0

0

0

0

0

7

7

7

7

5

5

5

5

4

4

4

4

3

3

3

3

1

1

1

1

1

430.00

440.00

450.00

460.00

470.00

480.00

490.00

500.00

4

4

4

4

2

2

2

2

5

6

6

6

8

0

8

8

9

9

9

9

0

0

0

0

8.2

9	0	0	0	0
8	0	0	0	0
7	7	7	7	7
6	0	0	0	0
5	4	4	4	4
4	2	2	2	2
3	1	1	1	1
2	528.00	349.00	529.00	569.00
1	29.00	29.00	29.00	29.00
	518.00	328.00	528.00	568.00

8.2

8.2

590.00

600.00

1

610.00

620.00

1

630.00

1

640.00

1

650.00

1

660.00

570.00

8.2

680.00

690.00

700.00 +
Street Digital
Painter

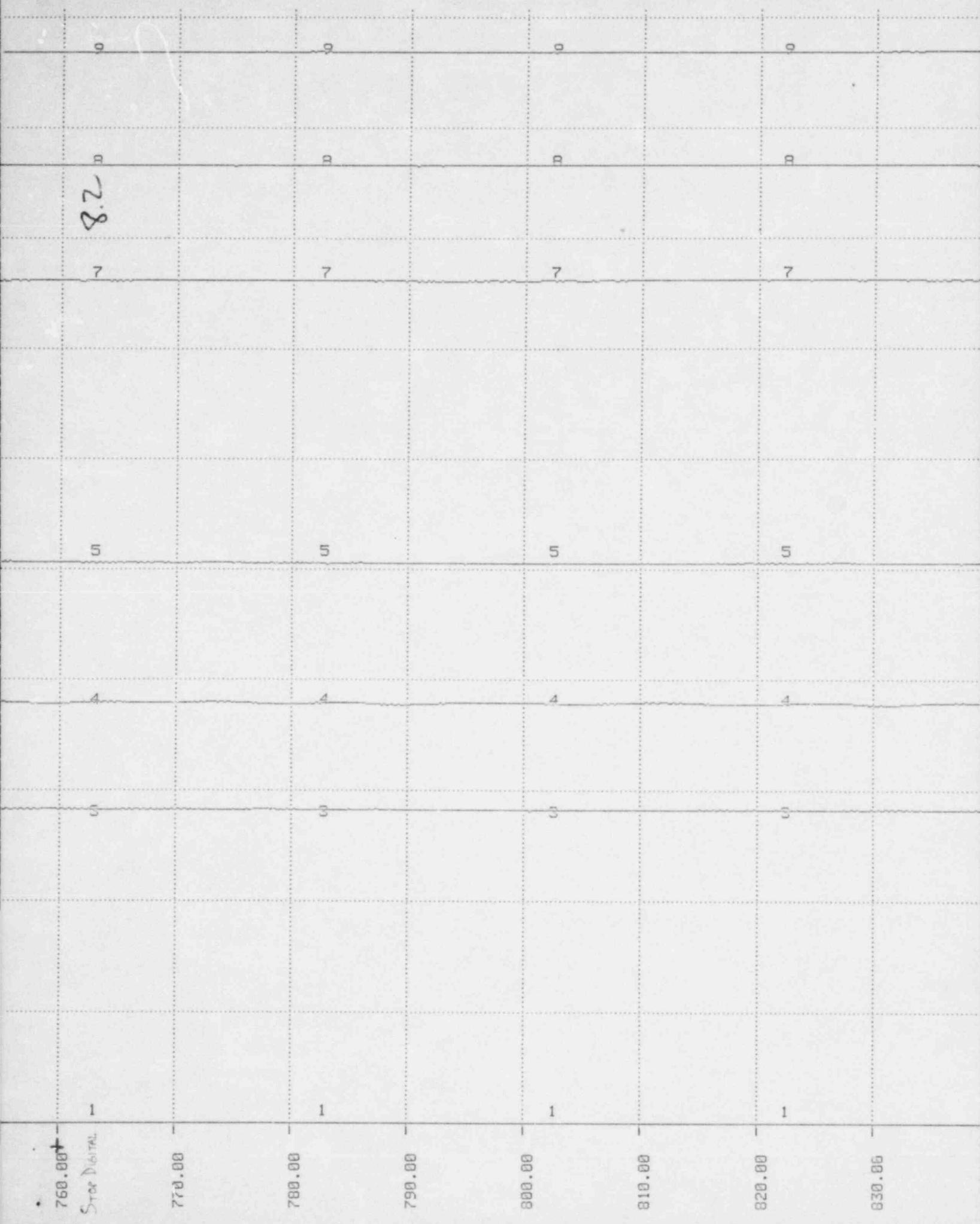
212

720.00

738.00

740.00

00:052



0	0	0	0	0	0	0	0
7	7	7	7	7	7	7	7
5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4
3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1
840.00	850.00	860.00	870.00	880.00	890.00	900.00	910.00
920.00							

8.2

930.00

940.00

950.00

960.00

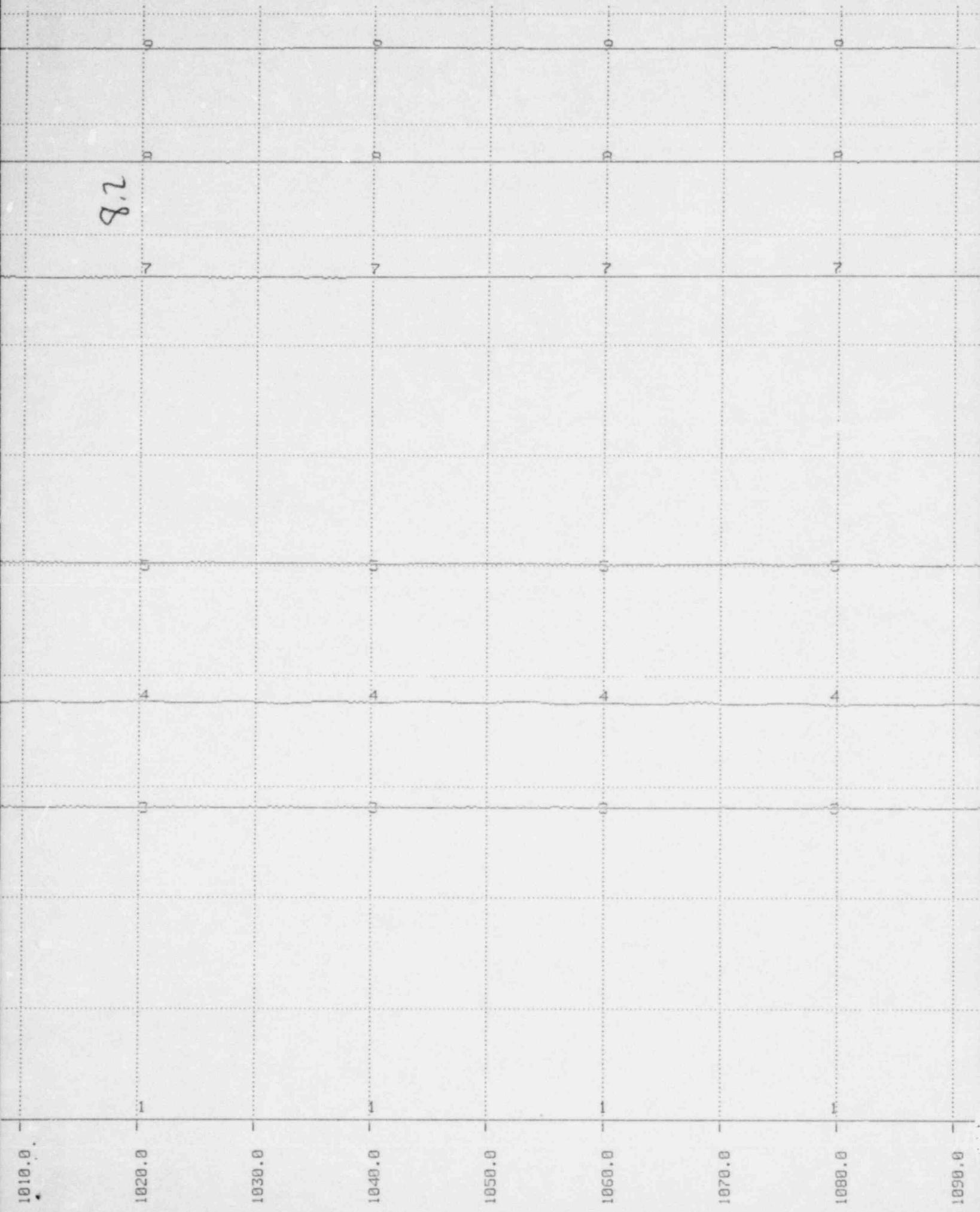
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980.00

990.00

1000.00

8.2



1100.0

8.2

1110.0

STOP AVERAGE
ROUTINE

1120.0

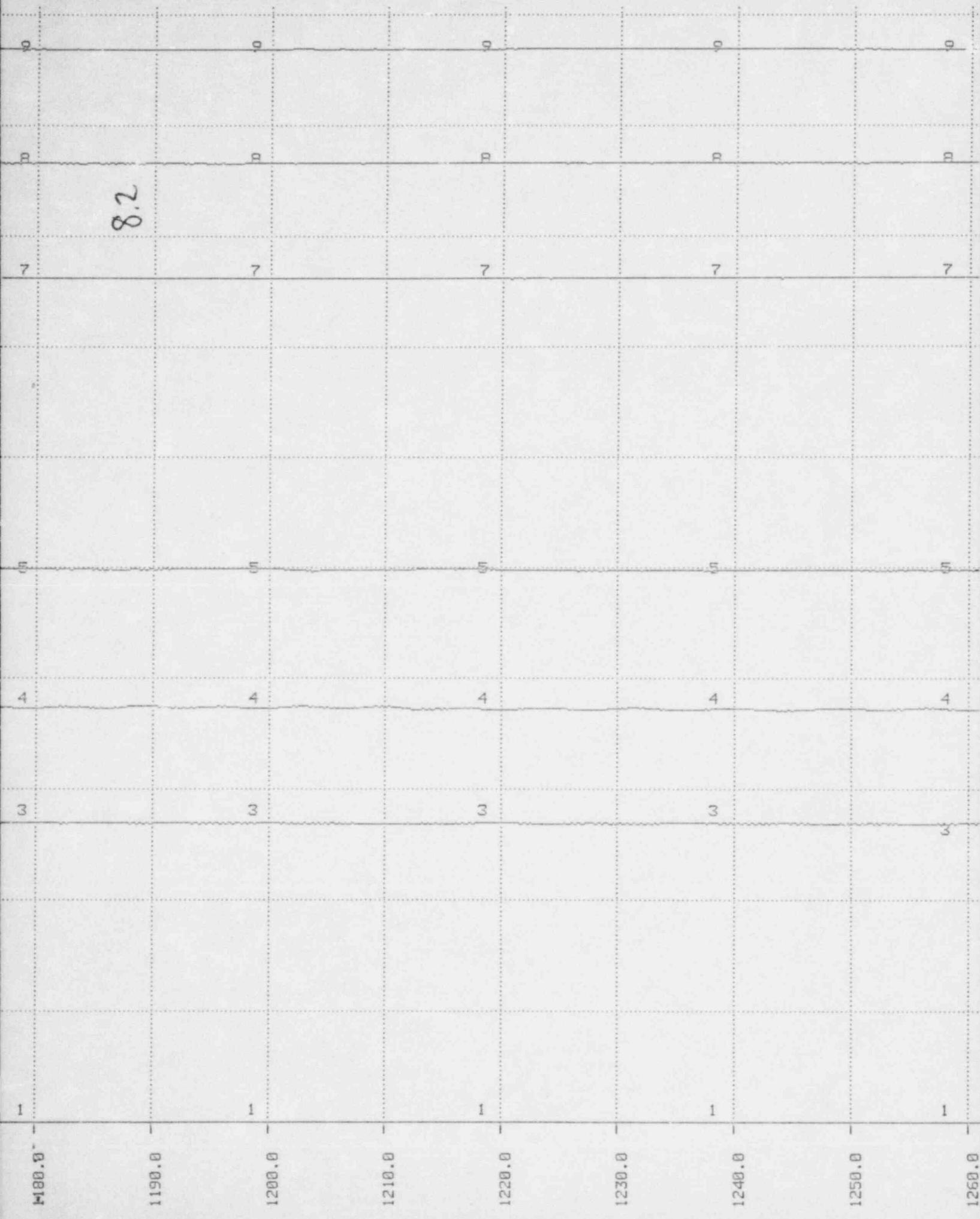
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1150.0

1160.0

1170.0





L.E.T. STEP 0.7 S/15/74

FILE 1000
PAGE 1
DATE 07-15-74
TIME 5 SHOT OF RUN 3124, 27, 10
DESCRIPTION RT-140, US SEC 3, FLOOR SUPPORT OF PUN

CHAN#	201	CHAN#	202	CHAN#	203	CHAN#	204
RELATIVE VLT	0.0101Kw	DE302VLT	DE303VLT	DE304VLT	DE305VLT	DE306VLT	DE307VLT
VAC	100	VAC	100	VAC	100	VAC	100
RELATIVE TIME	0	0	0	0	0	0	0
0.043, 561	2521, 000	0.043, 655	2756, 177				
0.059, 269	2623, 206	0.060, 594	2757, 614				
0.060, 269	2624, 647	0.062, 699	2758, 142				
0.063, 349	2625, 353	0.064, 669	2759, 414				
0.066, 271	2626, 206	0.067, 609	2760, 227				
0.064, 521	2627, 295	0.065, 662	2761, 827				
0.062, 575	2628, 608	0.062, 729	2762, 177				
0.059, 398	2629, 285	0.065, 704	2763, 124				
0.061, 676	2630, 662	0.062, 729	2764, 142				
RELATIVE TIME	0	0	0	0	0	0	0
0.0-0.2	365	0.0-0.2	3756	0.0-0.2	3757	0.0-0.2	3758
0.0-0.2	367	0.0-0.2	3758	0.0-0.2	3759	0.0-0.2	3760
0.0-0.2	371	0.0-0.2	3761	0.0-0.2	3762	0.0-0.2	3763
0.0-0.2	374	0.0-0.2	3764	0.0-0.2	3765	0.0-0.2	3766
0.0-0.2	376	0.0-0.2	3767	0.0-0.2	3768	0.0-0.2	3769
0.0-0.2	378	0.0-0.2	3769	0.0-0.2	3770	0.0-0.2	3771
0.0-0.2	380	0.0-0.2	3772	0.0-0.2	3773	0.0-0.2	3774
0.0-0.2	383	0.0-0.2	3775	0.0-0.2	3776	0.0-0.2	3777
0.0-0.2	386	0.0-0.2	3778	0.0-0.2	3779	0.0-0.2	3780
0.0-0.2	389	0.0-0.2	3781	0.0-0.2	3782	0.0-0.2	3783
0.0-0.2	392	0.0-0.2	3784	0.0-0.2	3785	0.0-0.2	3786
0.0-0.2	395	0.0-0.2	3787	0.0-0.2	3788	0.0-0.2	3789
0.0-0.2	398	0.0-0.2	3789	0.0-0.2	3790	0.0-0.2	3791
0.0-0.2	401	0.0-0.2	3792	0.0-0.2	3793	0.0-0.2	3794
0.0-0.2	404	0.0-0.2	3795	0.0-0.2	3796	0.0-0.2	3797
0.0-0.2	407	0.0-0.2	3798	0.0-0.2	3799	0.0-0.2	3800
0.0-0.2	410	0.0-0.2	3801	0.0-0.2	3802	0.0-0.2	3803
0.0-0.2	413	0.0-0.2	3804	0.0-0.2	3805	0.0-0.2	3806
0.0-0.2	416	0.0-0.2	3807	0.0-0.2	3808	0.0-0.2	3809
0.0-0.2	419	0.0-0.2	3810	0.0-0.2	3811	0.0-0.2	3812
0.0-0.2	422	0.0-0.2	3813	0.0-0.2	3814	0.0-0.2	3815
0.0-0.2	425	0.0-0.2	3816	0.0-0.2	3817	0.0-0.2	3818
0.0-0.2	428	0.0-0.2	3819	0.0-0.2	3820	0.0-0.2	3821
0.0-0.2	431	0.0-0.2	3822	0.0-0.2	3823	0.0-0.2	3824
0.0-0.2	434	0.0-0.2	3825	0.0-0.2	3826	0.0-0.2	3827
0.0-0.2	437	0.0-0.2	3828	0.0-0.2	3829	0.0-0.2	3830
0.0-0.2	440	0.0-0.2	3831	0.0-0.2	3832	0.0-0.2	3833
0.0-0.2	443	0.0-0.2	3834	0.0-0.2	3835	0.0-0.2	3836
0.0-0.2	446	0.0-0.2	3837	0.0-0.2	3838	0.0-0.2	3839
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0.0-0.2	455	0.0-0.2	3845	0.0-0.2	3846	0.0-0.2	3847
0.0-0.2	458	0.0-0.2	3848	0.0-0.2	3849	0.0-0.2	3850
0.0-0.2	461	0.0-0.2	3851	0.0-0.2	3852	0.0-0.2	3853
0.0-0.2	464	0.0-0.2	3854	0.0-0.2	3855	0.0-0.2	3856
0.0-0.2	467	0.0-0.2	3857	0.0-0.2	3858	0.0-0.2	3859
0.0-0.2	470	0.0-0.2	3859	0.0-0.2	3860	0.0-0.2	3861
0.0-0.2	473	0.0-0.2	3861	0.0-0.2	3862	0.0-0.2	3863
0.0-0.2	476	0.0-0.2	3864	0.0-0.2	3865	0.0-0.2	3866
0.0-0.2	479	0.0-0.2	3867	0.0-0.2	3868	0.0-0.2	3869
0.0-0.2	482	0.0-0.2	3869	0.0-0.2	3870	0.0-0.2	3871
0.0-0.2	485	0.0-0.2	3871	0.0-0.2	3872	0.0-0.2	3873
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0.0-0.2	491	0.0-0.2	3876	0.0-0.2	3877	0.0-0.2	3878
0.0-0.2	494	0.0-0.2	3878	0.0-0.2	3879	0.0-0.2	3880
0.0-0.2	497	0.0-0.2	3881	0.0-0.2	3882	0.0-0.2	3883
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OFF-LINE PLOT

L.R.T. STEP 0.0 8/16/64

FILE #

RUN #

DATE 8/16/64

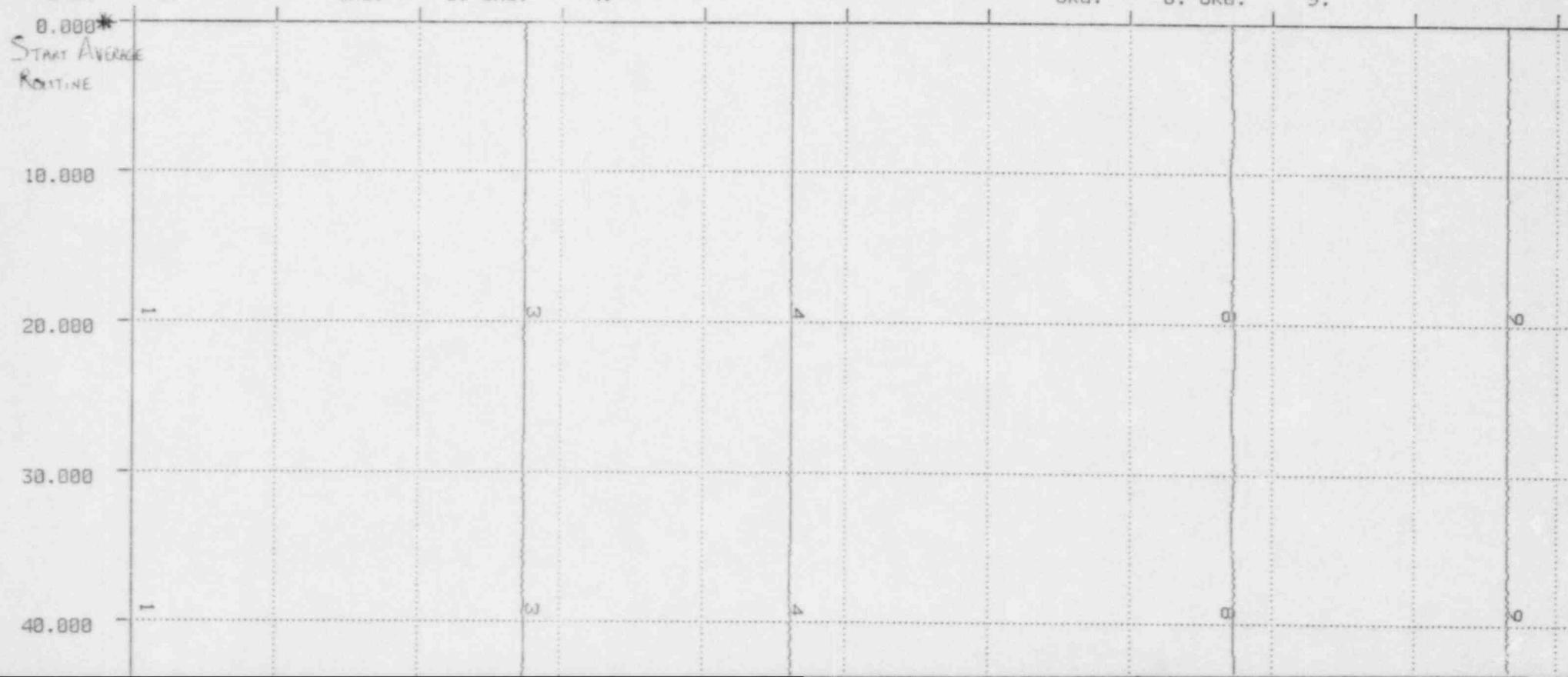
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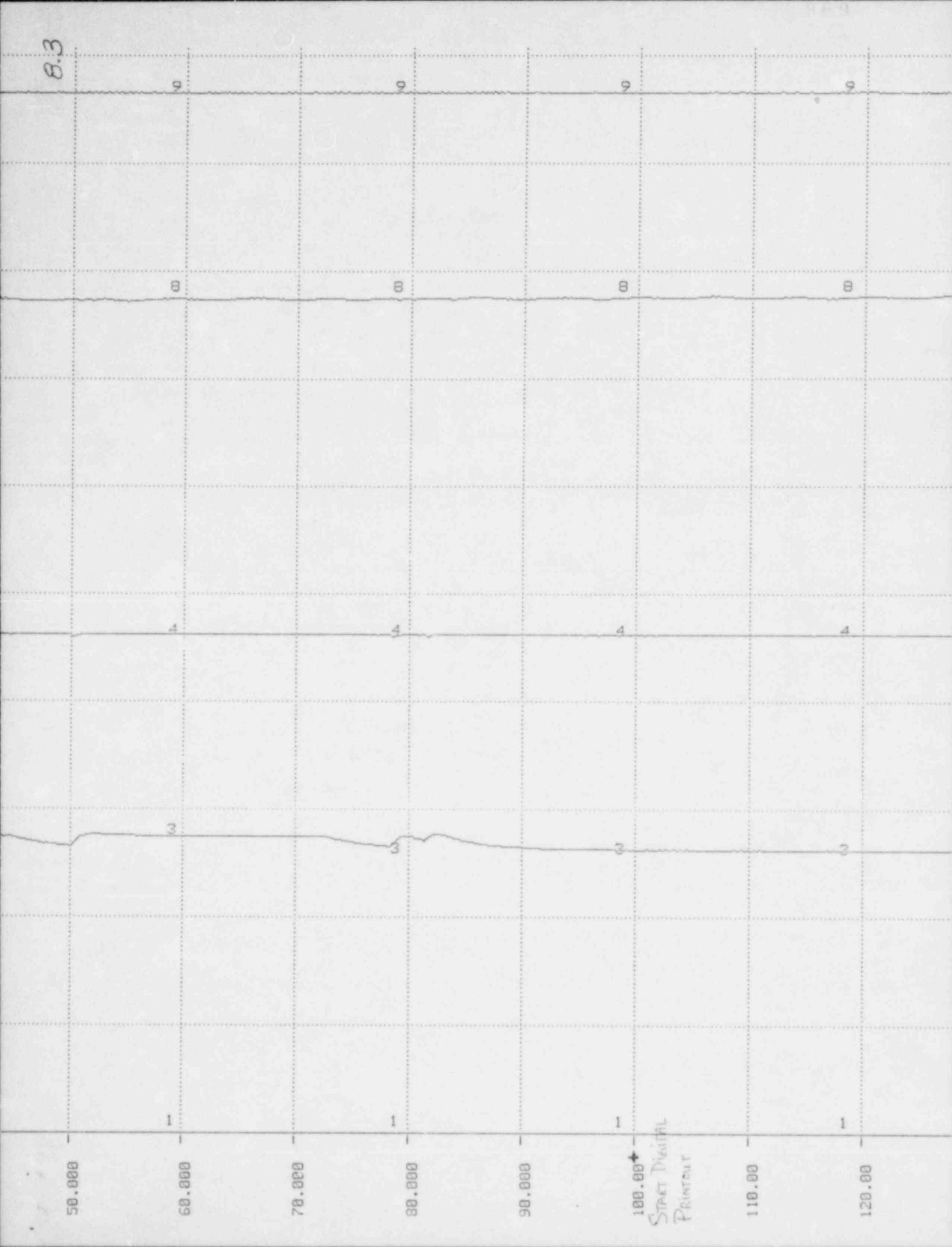
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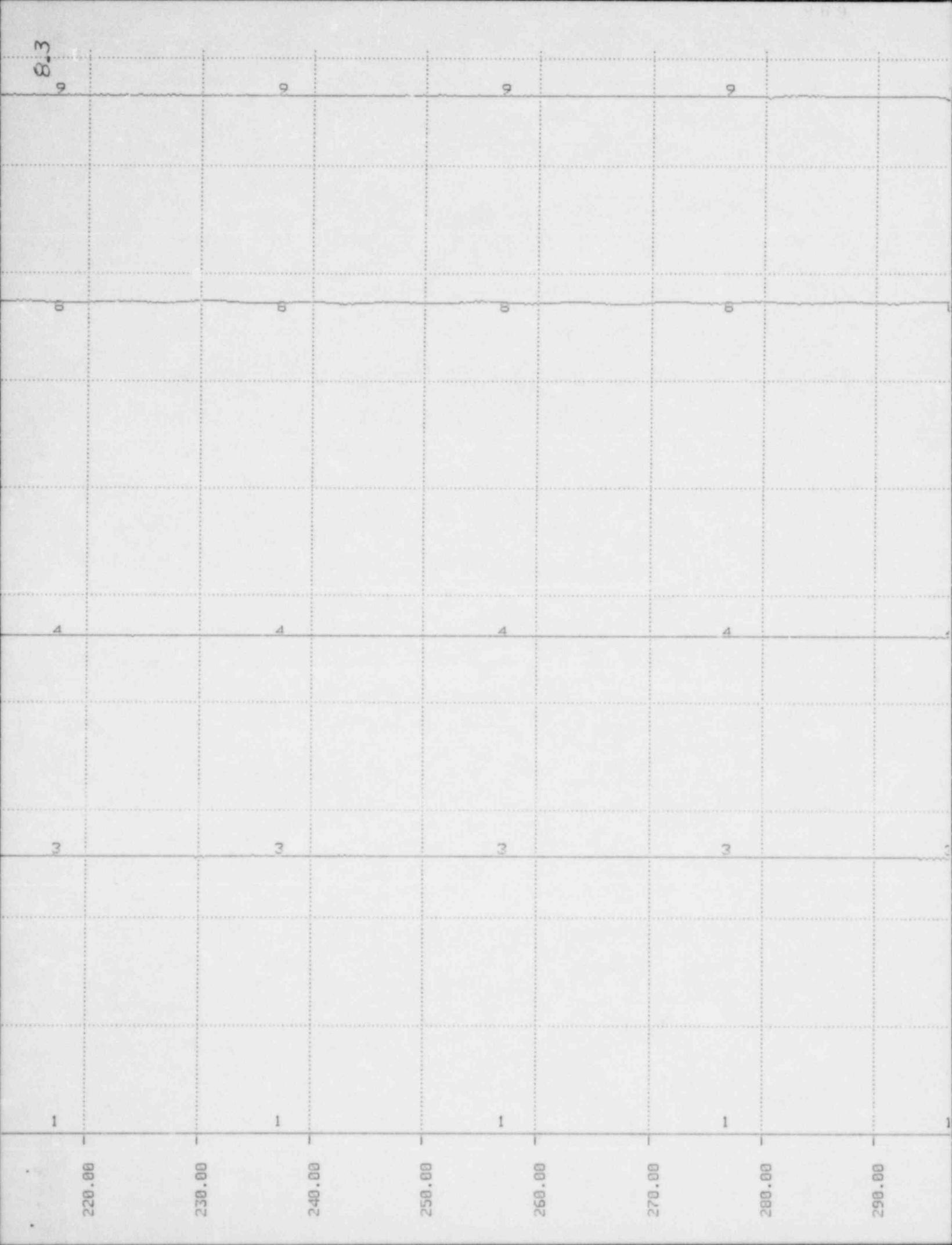
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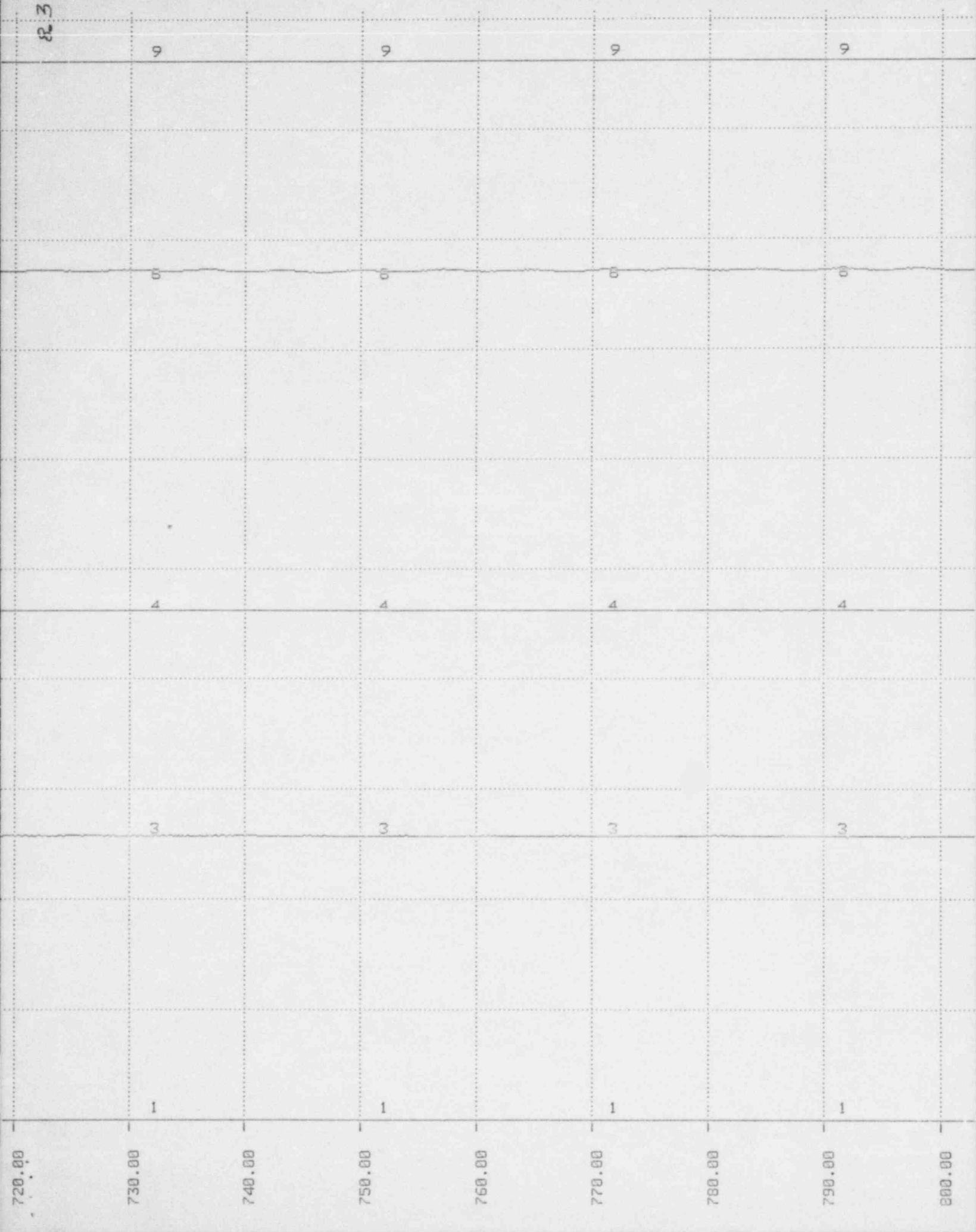
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Star Photo

950 00

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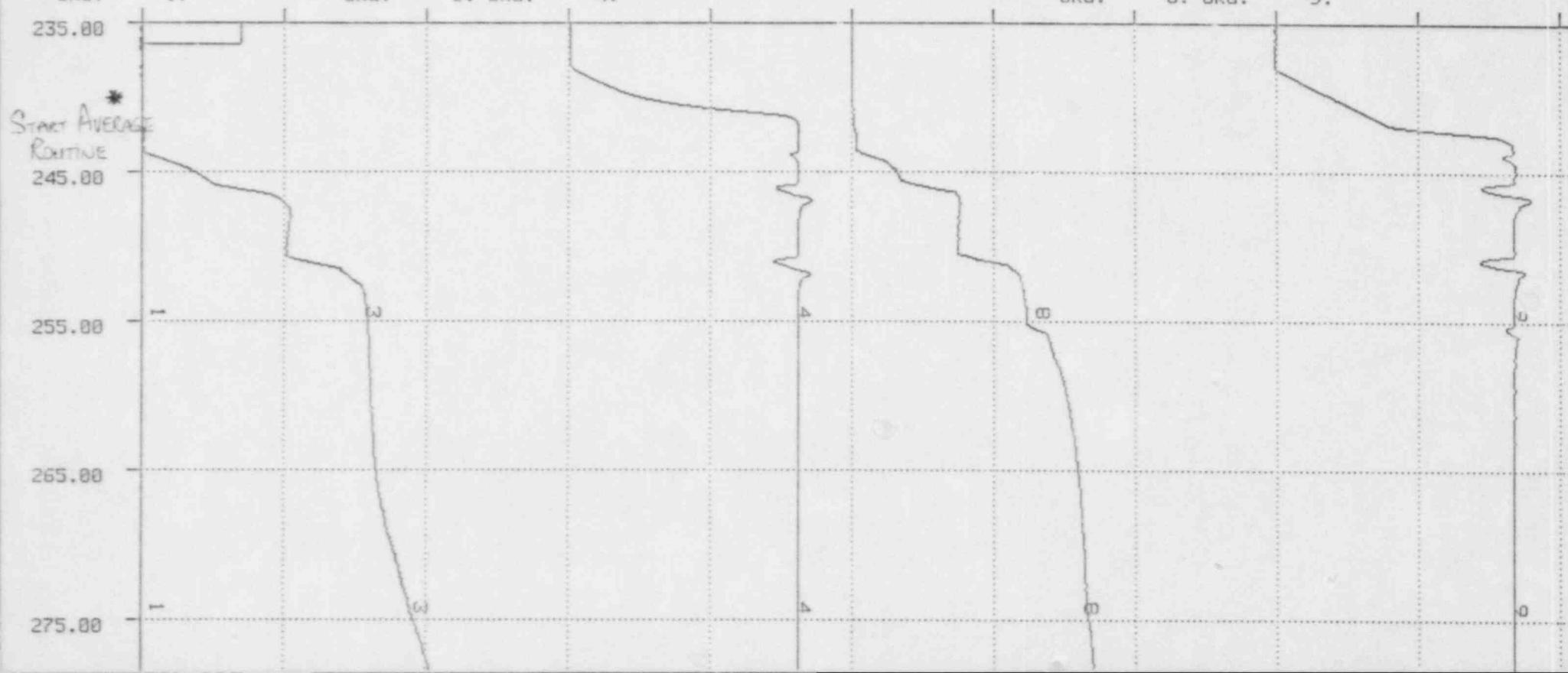
OFF-HLINE PLOT
I.E.T. STEP 0.4 8/15/04
FILE # 2
RUN # 2
DATE 8/15/04
TIME & START OF RUN 4:47:47: 18
BEGINNING RT 235.00 SEC'S. FROM START OF RUN

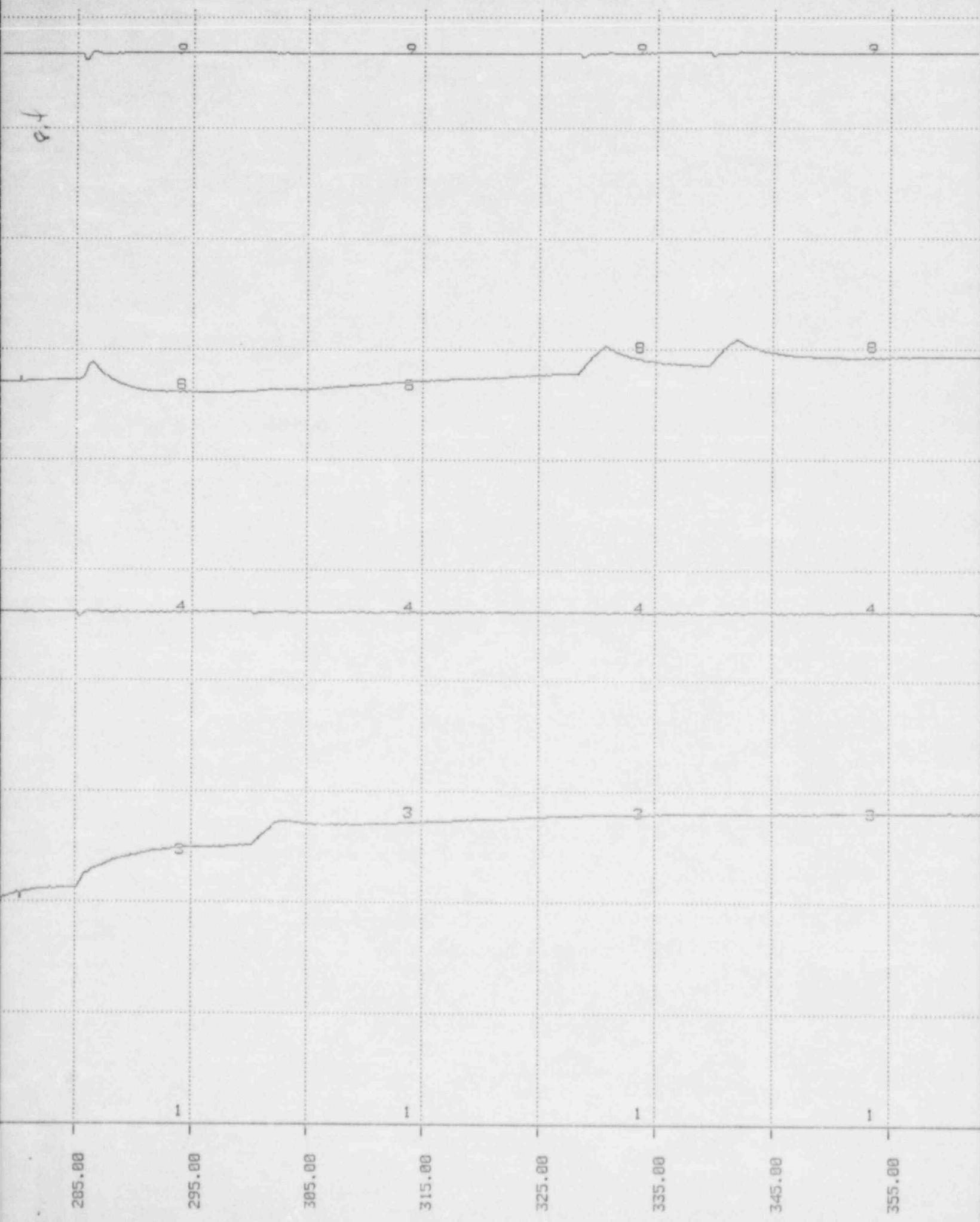
10.000SEC./GRID LINE

CHAN# 214
LOCA INT
VOLT
EU 18.0
OFF 0.0
ORG. 1.

CHAN# 202 CHAN# 200
DG101KU DG101VLT
KU VAC
EU 1800.0 EU 2500.0
OFF 2000.0 OFF 0.0
ORG. 3. ORG. 4.

CHAN# 212 CHAN# 210
DG103KU DG103VLT
KU VAC
EU 1800.0 EU 2500.0
OFF 2000.0 OFF 0.0
ORG. 8. ORG. 9.





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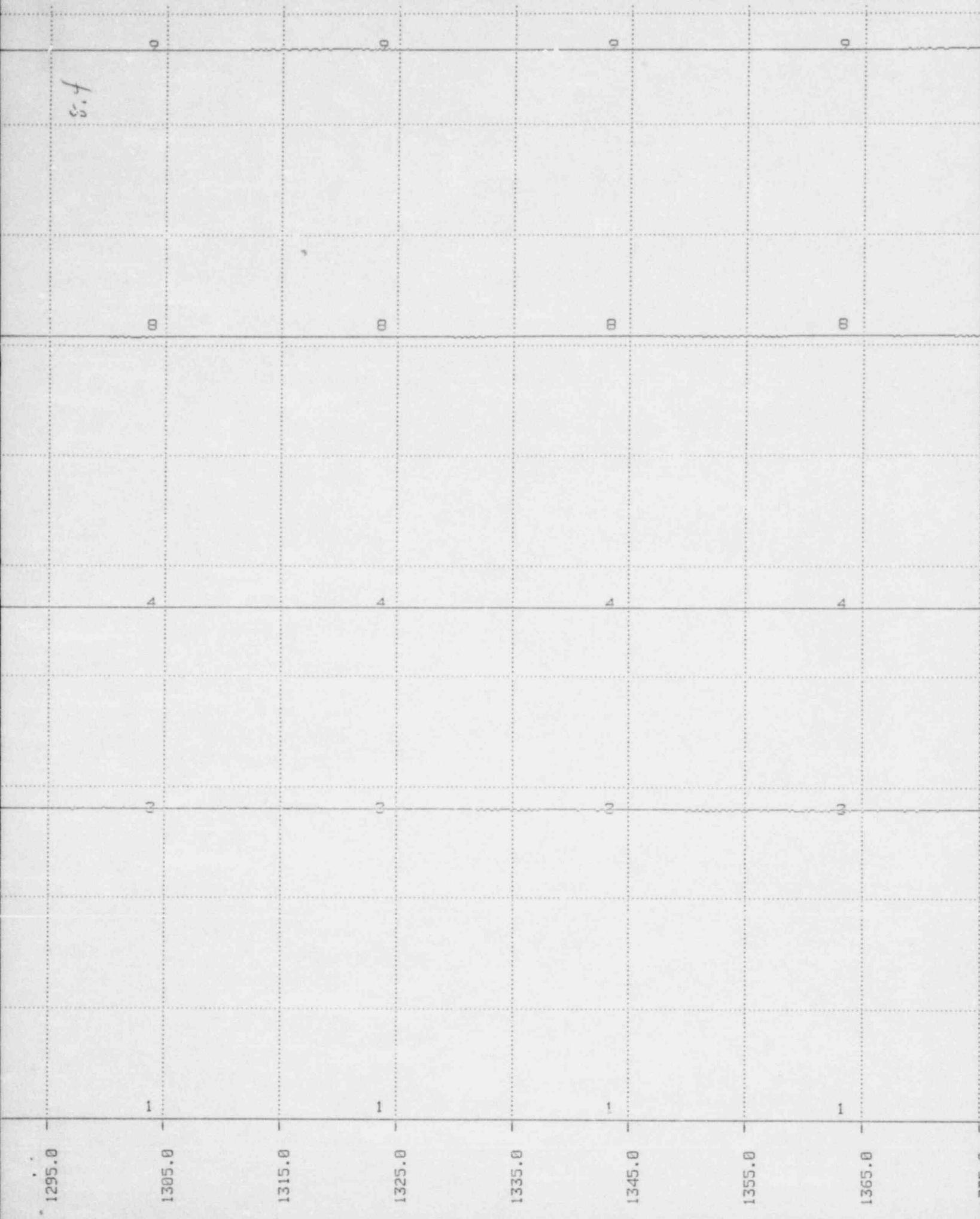
865.0

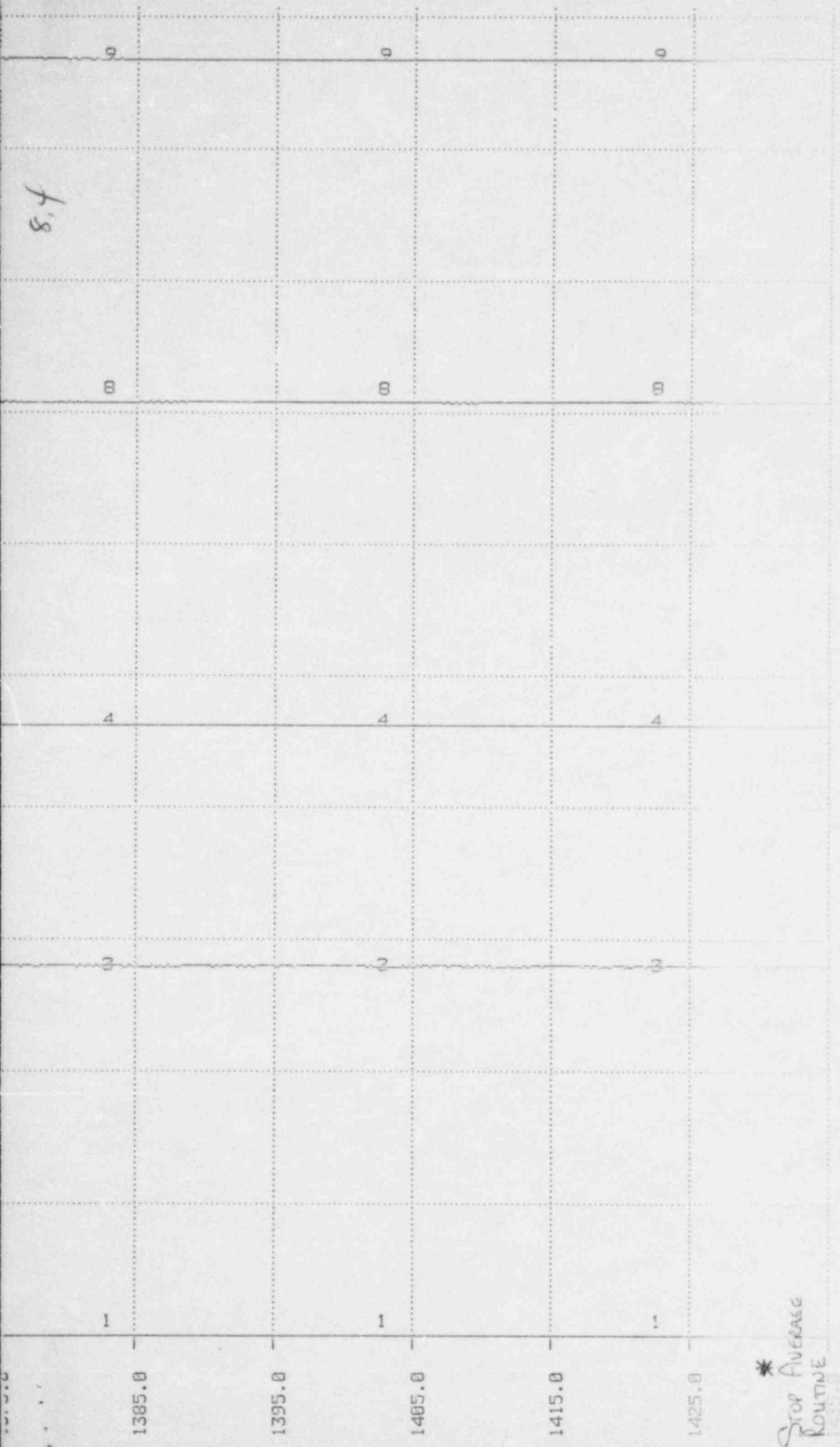
855.0

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Stop Average
ROUTINE

492, 493
468, 469
494, 495

496, 497, 498

499, 500, 501

502, 503, 504

505, 506, 507

508, 509, 510

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RELATIVE TIME	1893.747	
4210, 191	1893.748	0
4210, 199	1893.750	1893.751
4210, 190	1893.754	1893.755
4210, 763	1893.755	1893.756
4210, 422	1893.759	1893.760
4210, 156	1893.765	1893.766
4210, 193	1893.766	1893.767
4210, 732	1893.766	1893.767
4210, 472	1893.767	1893.768
4210, 639	1893.769	1893.770
RELATIVE TIME	1893.770	
4210, 198	1893.770	1893.771
4202, 829	1893.776	1893.777
4210, 934	1893.795	1893.796
4210, 654	1893.796	1893.797
4210, 803	1893.799	1893.800
4202, 472	1893.849	1893.850
4210, 152	1893.849	1893.850
4210, 763	1893.856	1893.857
4202, 639	1893.856	1893.857
4210, 763	1893.859	1893.860
4202, 472	1893.862	1893.863
RELATIVE TIME	1893.863	
4202, 399	1893.871	1893.872
4202, 472	1893.872	1893.873

RELATIVE TIME	0.04	2913.744
RELATIVE TIME	0.06	2913.744
RELATIVE TIME	0.08	2913.744
RELATIVE TIME	0.10	2913.744
RELATIVE TIME	0.12	2913.744
RELATIVE TIME	0.14	2913.744
RELATIVE TIME	0.16	2913.744
RELATIVE TIME	0.18	2913.744
RELATIVE TIME	0.20	2913.744
RELATIVE TIME	0.22	2913.744
RELATIVE TIME	0.24	2913.744
RELATIVE TIME	0.26	2913.744
RELATIVE TIME	0.28	2913.744
RELATIVE TIME	0.30	2913.744
RELATIVE TIME	0.32	2913.744
RELATIVE TIME	0.34	2913.744
RELATIVE TIME	0.36	2913.744
RELATIVE TIME	0.38	2913.744
RELATIVE TIME	0.40	2913.744
RELATIVE TIME	0.42	2913.744
RELATIVE TIME	0.44	2913.744
RELATIVE TIME	0.46	2913.744
RELATIVE TIME	0.48	2913.744
RELATIVE TIME	0.50	2913.744
RELATIVE TIME	0.52	2913.744
RELATIVE TIME	0.54	2913.744
RELATIVE TIME	0.56	2913.744
RELATIVE TIME	0.58	2913.744
RELATIVE TIME	0.60	2913.744
RELATIVE TIME	0.62	2913.744
RELATIVE TIME	0.64	2913.744
RELATIVE TIME	0.66	2913.744
RELATIVE TIME	0.68	2913.744
RELATIVE TIME	0.70	2913.744
RELATIVE TIME	0.72	2913.744
RELATIVE TIME	0.74	2913.744
RELATIVE TIME	0.76	2913.744
RELATIVE TIME	0.78	2913.744
RELATIVE TIME	0.80	2913.744
RELATIVE TIME	0.82	2913.744
RELATIVE TIME	0.84	2913.744
RELATIVE TIME	0.86	2913.744
RELATIVE TIME	0.88	2913.744
RELATIVE TIME	0.90	2913.744
RELATIVE TIME	0.92	2913.744
RELATIVE TIME	0.94	2913.744
RELATIVE TIME	0.96	2913.744
RELATIVE TIME	0.98	2913.744
RELATIVE TIME	1.00	2913.744

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4122, 359	2916, 102			
4121, 359	2916, 132			
4120, 357	2923, 945			
4120, 357	2923, 183			
RELATIVE TIME	0	0		
4124, 071	2919, 045			
4125, 205	2915, 092			
4128, 535	2916, 794			
4121, 709	2916, 032			
4119, 507	2914, 045			
4122, 359	2913, 744			
4125, 524	2916, 032			
4124, 682	2916, 794			
4125, 524	2913, 744			
4123, 636	2916, 794			
RELATIVE TIME	0	0		
4122, 359	2916, 052			
4128, 017	2916, 032			
4112, 559	2913, 744			
4118, 636	2909, 931			
4120, 636	2918, 694			
4125, 594	2902, 901			
4125, 594	2959, 931			
4124, 788	2916, 794			
4126, 824	2915, 744			
4126, 359	2912, 901			
RELATIVE TIME	0	0		
4122, 359	2916, 794			
4126, 954	2918, 144			
4125, 354	2919, 931			
4128, 027	2916, 794			
4120, 354	2916, 932			
4129, 636	2912, 981			
4129, 365	2916, 694			
4125, 356	2912, 981			
4125, 924	2916, 032			
RELATIVE TIME	0	0		
4128, 636	2916, 794			
4122, 359	2919, 945			
4126, 354	2912, 981			
4124, 042	2916, 794			
4126, 354	2918, 845			
4121, 789	2919, 645			
4129, 206	2916, 082			
4124, 071	2919, 945			
4126, 354	2916, 032			
4125, 354	2919, 945			
RELATIVE TIME	0	0		
4121, 789	2920, 895			
4119, 587	2922, 995			
4126, 354	2922, 152			
4122, 359	2919, 645			
4128, 636	2919, 845			

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4121.703	2922.132	959	0
4121.703	2925.183	959	0
4126.534	2922.132	959	0
4126.534	2922.093	959	0
4126.534	2922.093	959	0
4126.534	2919.843	959	0
4126.534	2916.754	959	0
4126.534	2919.062	959	0
4126.534	2919.045	959	0
4122.359	2919.045	959	0
4117.793	2919.032	959	0
4122.359	2922.132	959	0
4124.542	2922.093	959	0
4124.542	2919.843	959	0
4122.359	2916.754	959	0
4126.534	2919.062	959	0
4122.359	2919.045	959	0
4126.534	2919.032	959	0
4121.703	2916.794	959	0
4124.542	2916.794	959	0
4126.534	2912.991	959	0
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4121.703	2916.794	959	0
4124.542	2913.764	959	0
4126.534	2910.639	959	0
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4119.567	2910.639	959	0
4126.534	2912.501	959	0
4125.924	2910.639	959	0
4124.542	2907.644	959	0
4126.534	2906.501	959	0
4126.534	2904.553	959	0
4126.534	2903.644	959	0
4125.924	2907.644	959	0
4126.534	2907.644	959	0
4120.536	2907.644	959	0
4126.534	2904.553	959	0
4126.534	2904.553	959	0
4119.567	2904.553	959	0
4126.534	2904.553	959	0
4122.359	2902.644	959	0
4126.534	2905.639	959	0
4126.534	2906.639	959	0
4121.703	2906.639	959	0
4126.534	2906.639	959	0
4126.534	2906.639	959	0
4122.359	2906.639	959	0
4126.534	2913.639	959	0
4121.703	2913.639	959	0

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RELATIVE TIME

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4122.359

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4125.354

4130.927

2903.995

4126.354

2902.32

4120.266

2902.123

4126.310

2916.946

4125.354

2922.172

2922.172

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OFF-LINE PLOT

L.S.T. STEP 0.5 8/17/84

FILE # 2

RUN # -2

DATE 8-17-84

TIME @ START OF RUN 20:33:50: 10

BEGINNING AT 110.00 SEC. FROM START OF RUN

10.00SEC./GRID LINE

CHAN# 214

LOCA INT

VOLT

EU 10.0

OFF 0.0

ORG. 1.

CHAN# 207 CHAN# 205

DG102KU DG102VLT

KW VAC

EU 1000.0 EU 2500.0

OFF 2000.0 OFF 0.0

ORG. 3. ORG. 4.

CHAN# 212 CHAN# 210

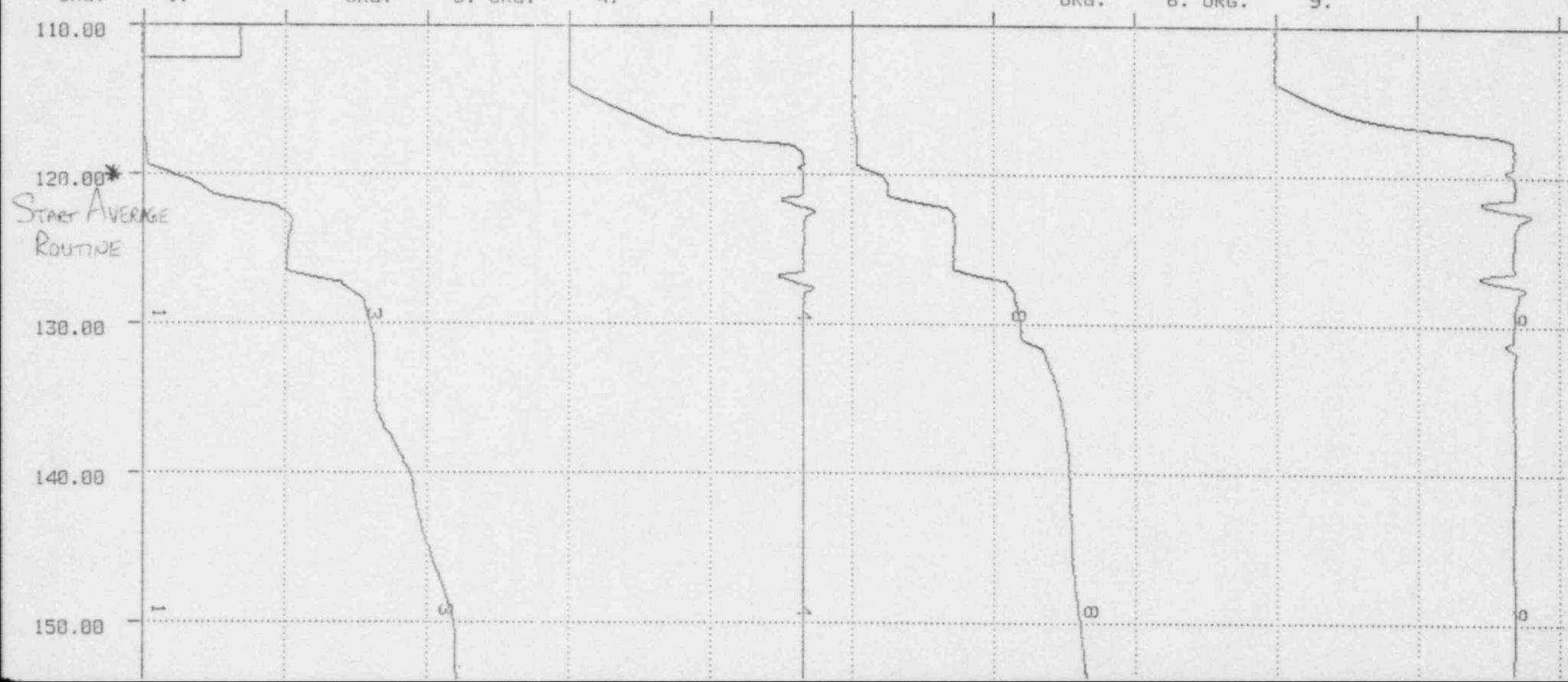
DG103KU DG103VLT

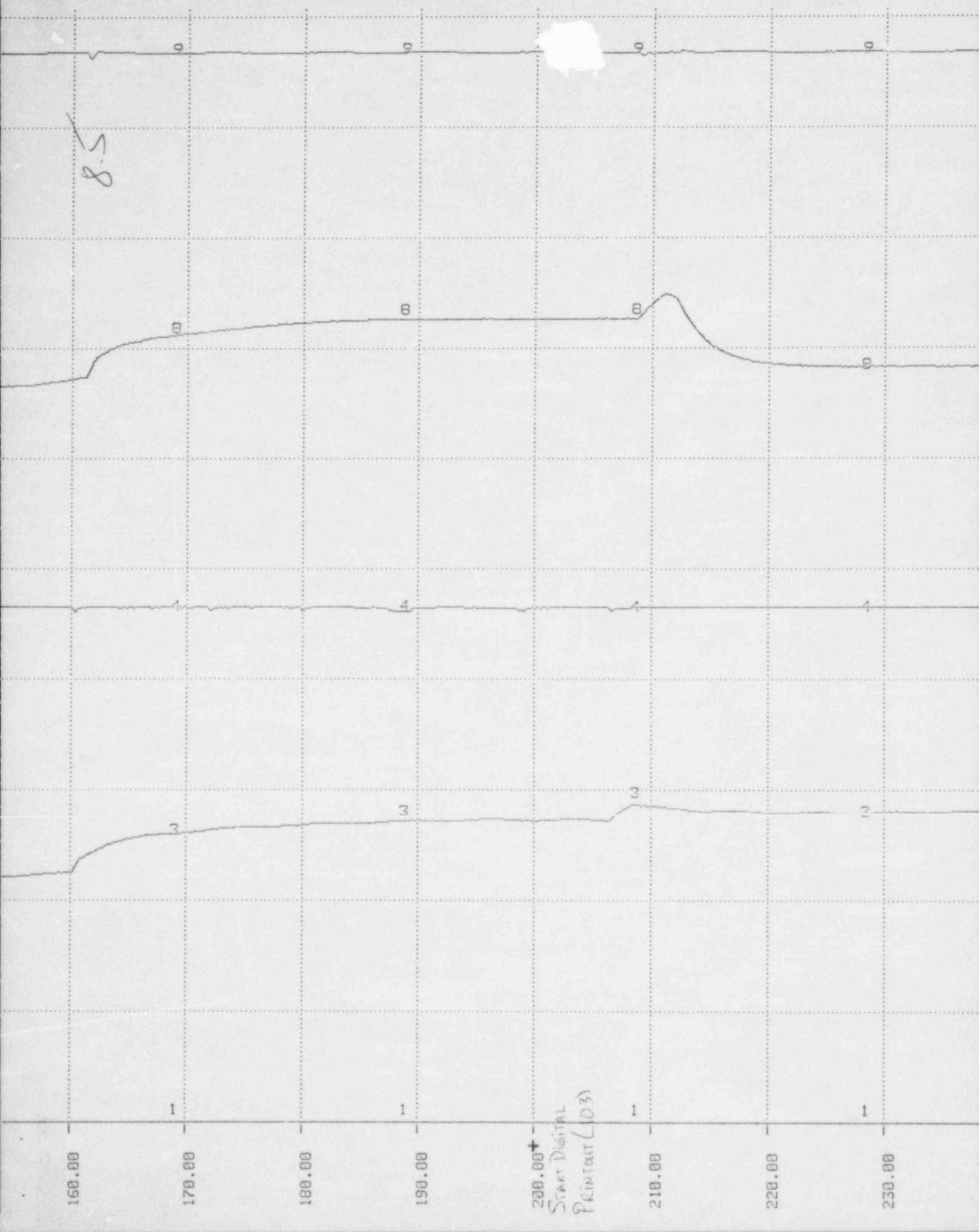
KW VAC

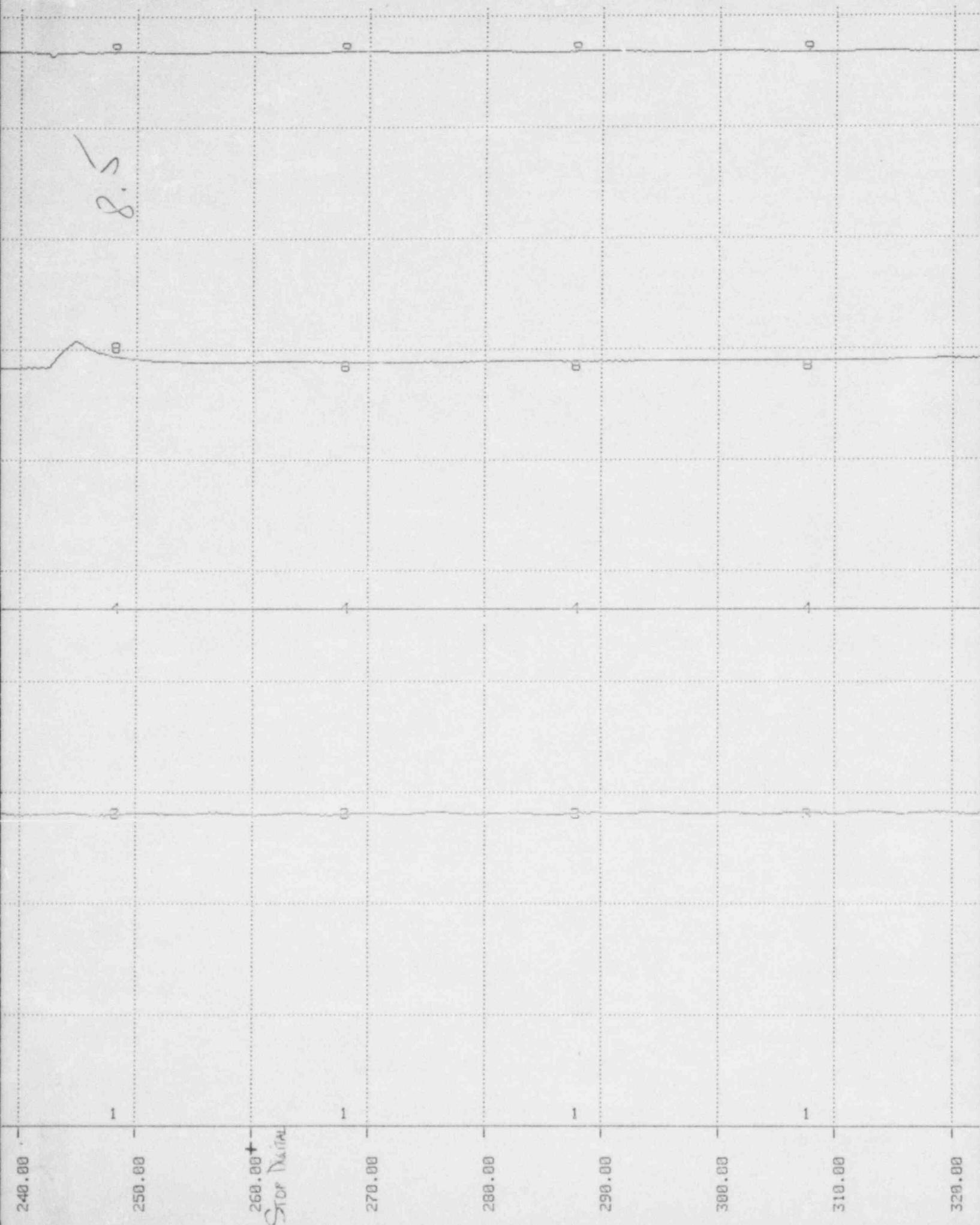
EU 1000.0 EU 2500.0

OFF 2000.0 OFF 0.0

ORG. 8. ORG. 9.







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350.00

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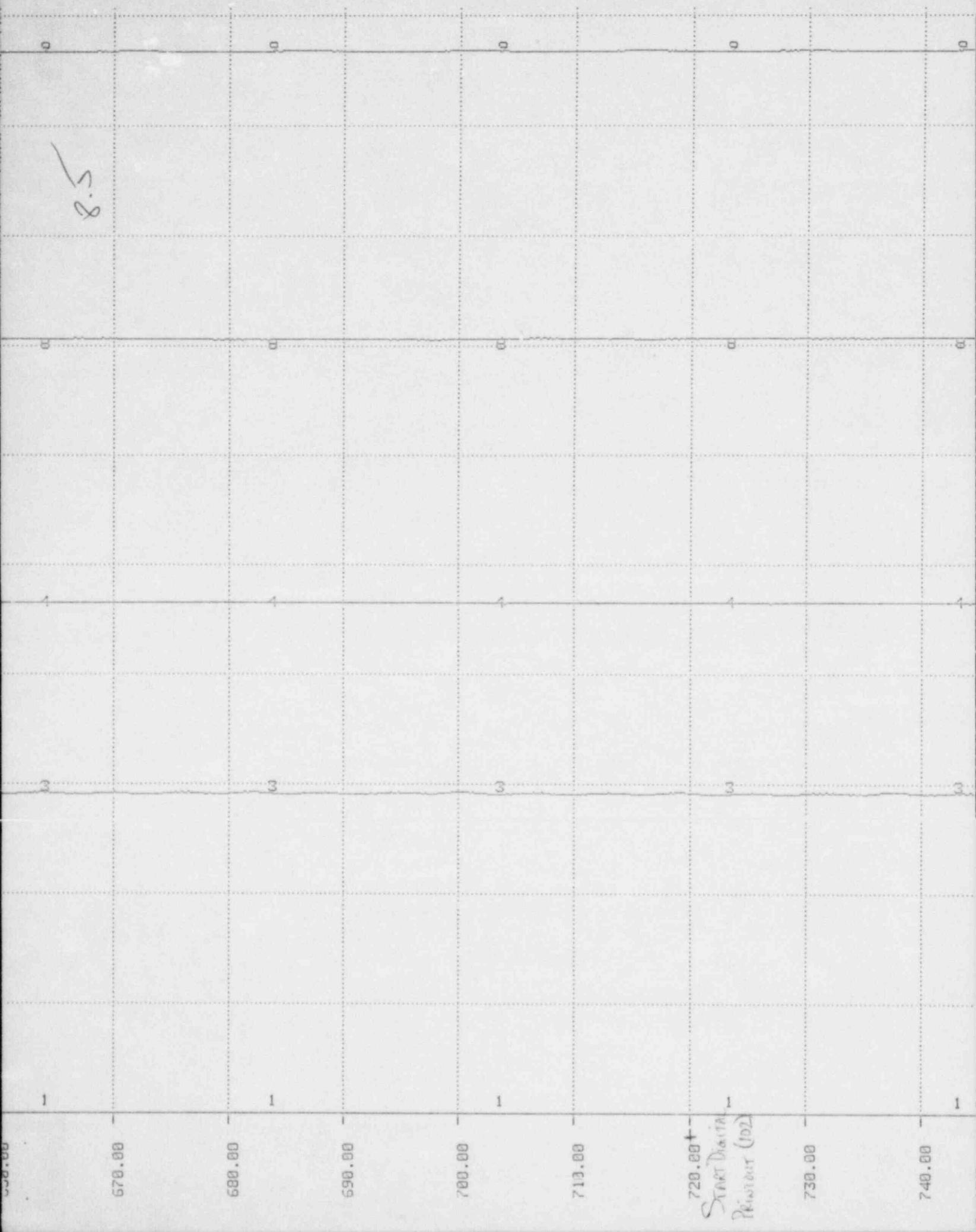
610.00

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760.00

770.00

780.00
Total Due

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840.00

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850.00

860.00

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870.00

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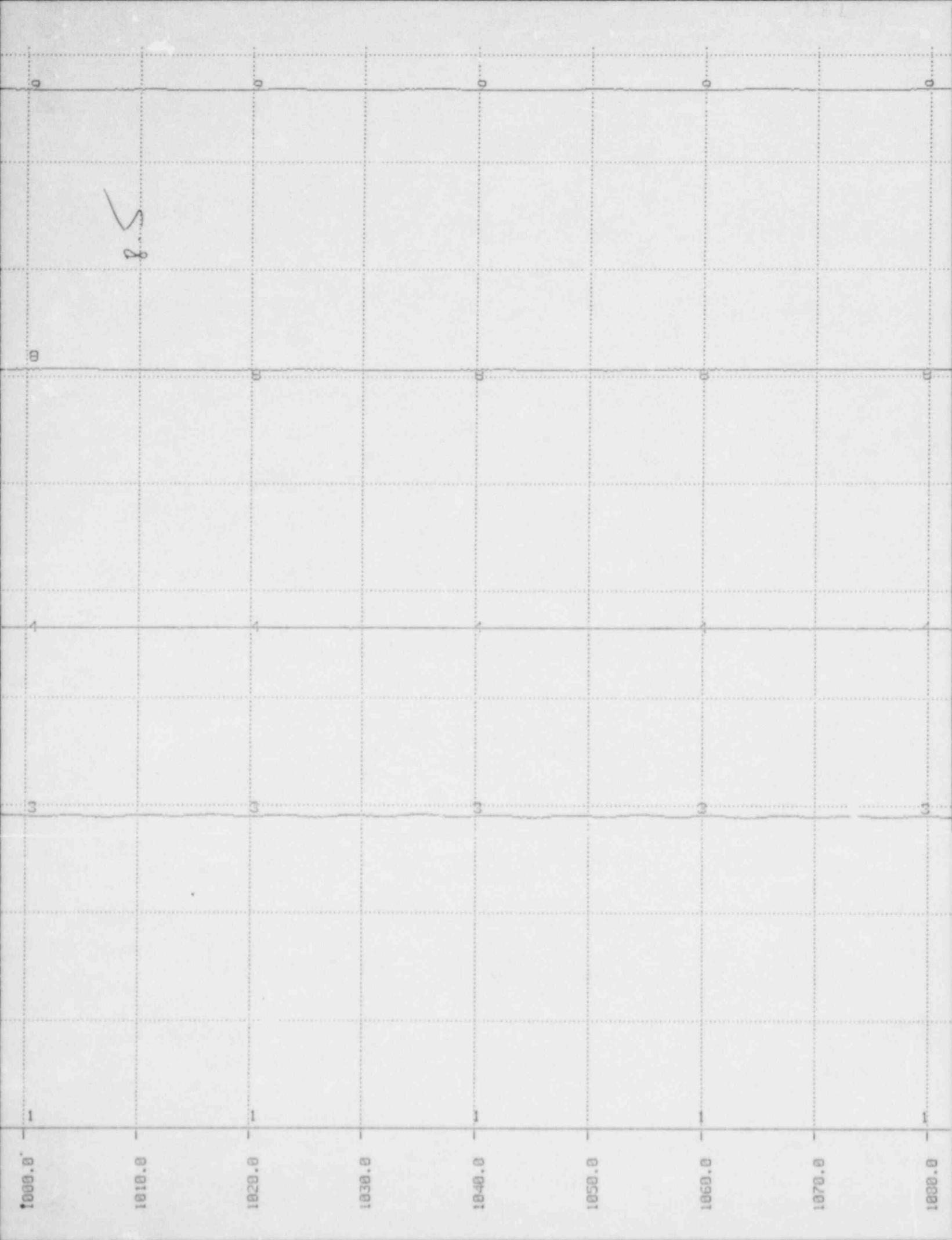
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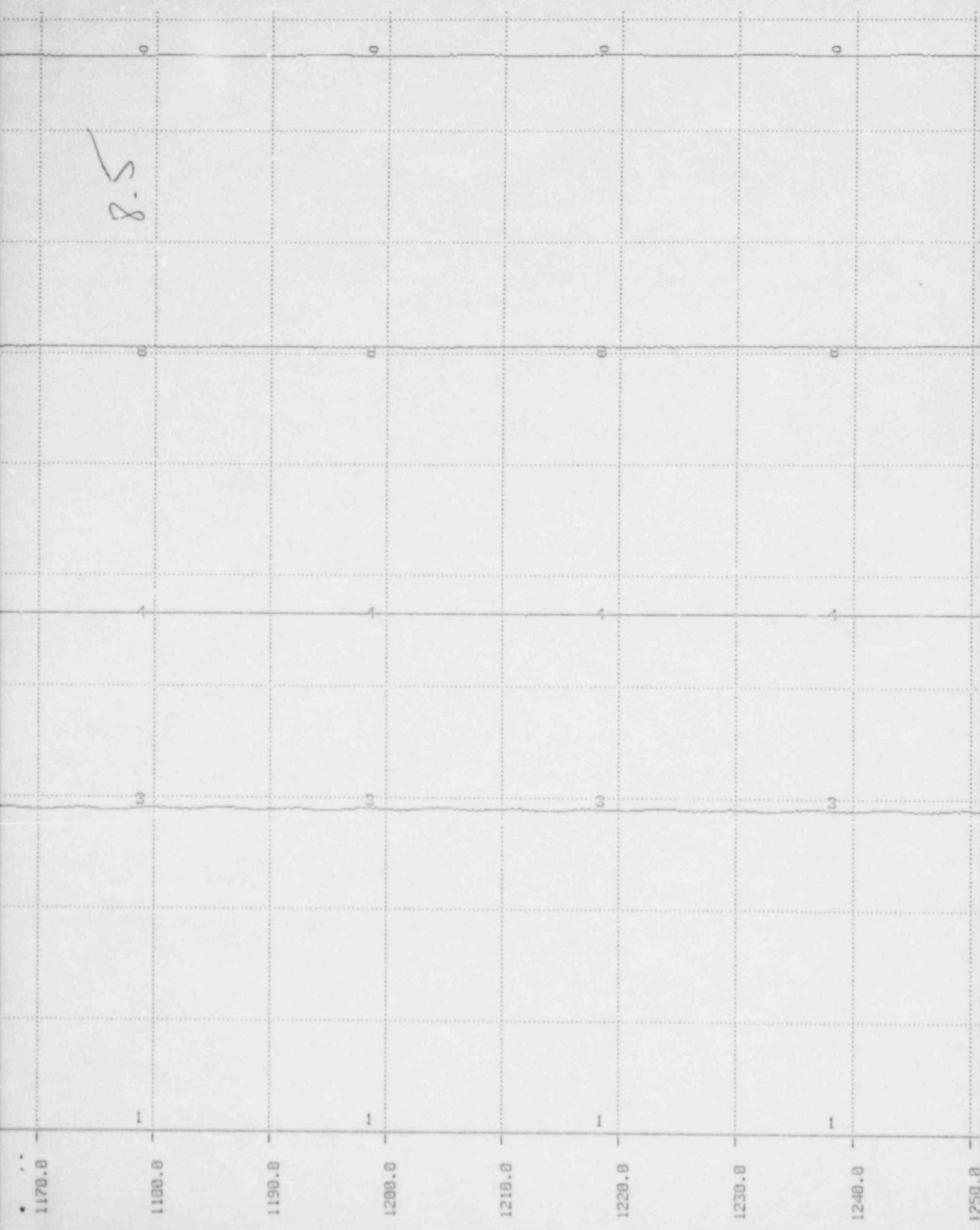
1130.0

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Stop Avenue
Lane