

CRA, INC.

WOODWARD NO. 6, 8, AND 9

DIPMETER REPORT

Computer Inventoried



SCHLUMBERGER WELL SURVEYING CORPORATION

HOUSTON, TEXAS

January 17, 1966

PLEASE REPLY TO:
SUITE 1120 WICHITA PLAZA BLDG.
WICHITA, KANSAS 67202

CRA, Inc.
Box 445
Wellington, Kansas

Gentlemen:

This report is intended to summarize our interpretation of the Continuous Dipmeter Surveys ran on your Woodward No. 6, 8, and 9. Included in this report is the graphic presentation of dip calculations, the tabular presentation of dip calculations and a series of dip frequency polar diagrams the interpretation of which is below.

Woodward No. 6

The Bartlesville Sand (interval 590-655) is missing in this well. Dip patterns indicate this well is on the southeast side of the bar which strikes N60E-S60W. This strike indicates the sand may thin or possibly pinch out on the south end of the bar. Another explanation might be a thinning of the bar near this location. This location definitely limits the width of the bar sand.

Woodward No. 8

The Bartlesville Sand from 618-654 is a bar sand striking N30E-S30W with thicker sand to the S60E of this well. Since the width of the bar is undetermined, a strike location is recommended with only slight preference toward the axis of the bar.

Woodward No. 9

The Bartlesville Sand from 651-678 is a bar sand striking N15W-S15E with thicker sand to the N75E of this well.

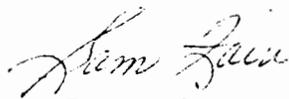
A map is also included in this report. This map contains the strikes and arrows toward thicker sands on all of the wells. In the case where no sand is present the arrows point in the direction of the sand bar. It is readily apparent that No. 6 Woodward is the only well on the east (or SE) side of the bar system. Extreme care must be

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exercised in developing this project as the width of the system is not defined. The sediments were transported from east (or SE) to west (or NW) and the western side of the bar will probably be the steeper side. Recommended locations are NE-SE-NW of Sec. 13-25S-21E and NW-NW-SE of Sec. 12-25S-21E. These locations are strike wells to No. 9 Woodward and No. 8 Woodward respectively and slightly toward thicker sand to account for the curvature of the bar system.

The interpretations of Dipmeter logs and the geological conclusions which are discussed in this report represent our best judgment. Nevertheless, since all interpretations and the conclusions reached are based on inferences from electrical and other measurements, as well as geological data which necessarily includes the consideration of some unproven factors, we must advise you that we cannot and do not guarantee their accuracy or correctness and shall not be liable or responsible, except in the case of willful negligence on our part, for any loss, costs, damages or expenses that may be incurred or sustained from such interpretations or the geological conclusions set out in this report.

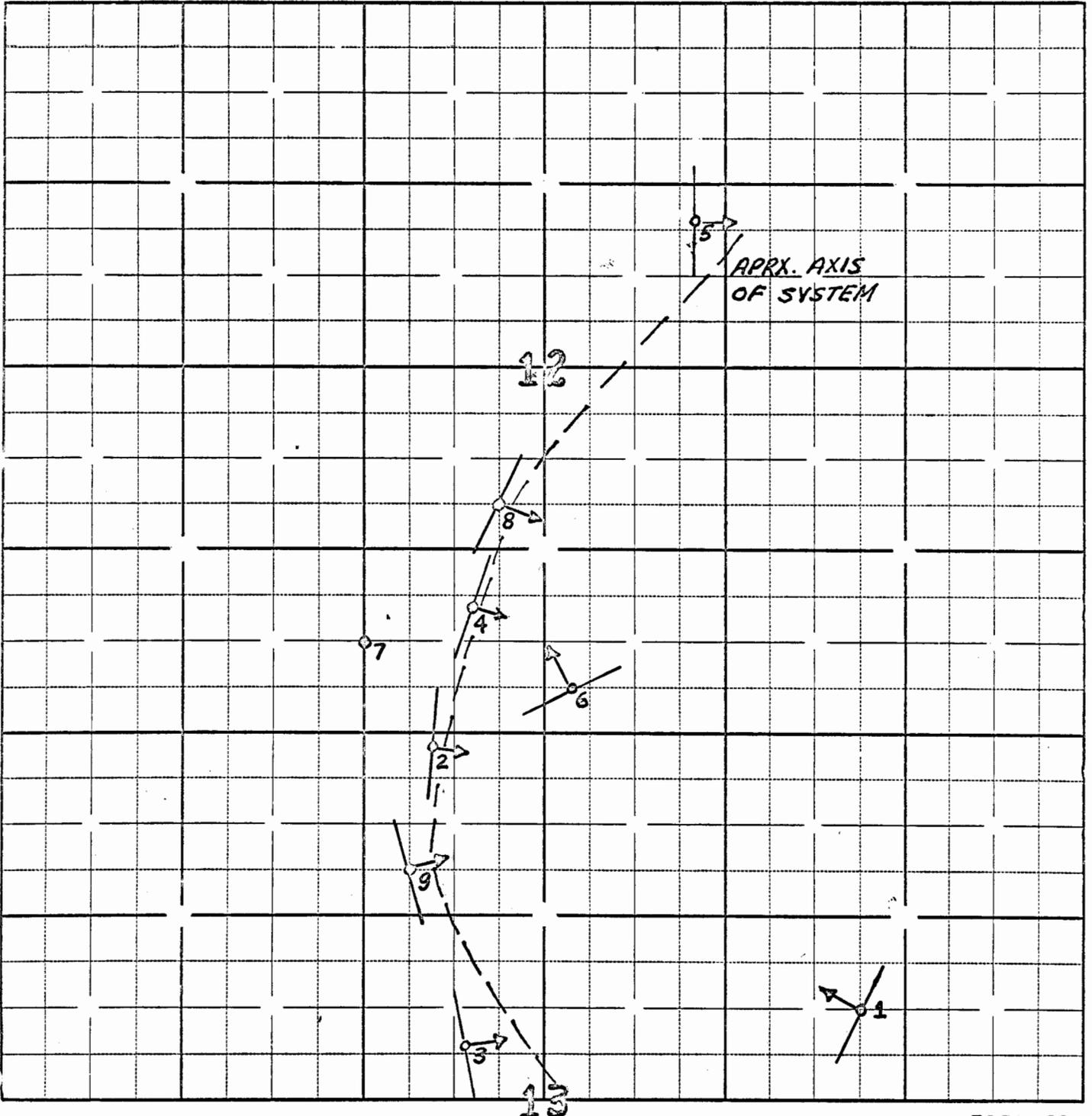
Thank you for calling Schlumberger on these wells. If we can be of further assistance, please feel free to call on us at any time.



Sam Fain

Township 25S, Range 21E, County BOURBON, State KANSAS

NUMBERS ARE WELL NO.
ARROWS INDICATE SAND THICKENING DIRECTION
LINES INDICATE SAND STRIKE DIRECTION



SCHLUMBERGER WELL SURVEYING CORPORATION
CONTINUOUS DIPMETER CALCULATIONS
ELECTRONIC COMPUTER JOB 497

CRA, INC.
WOODWARD NO. 6
BOURBON COUNTY, KANSAS

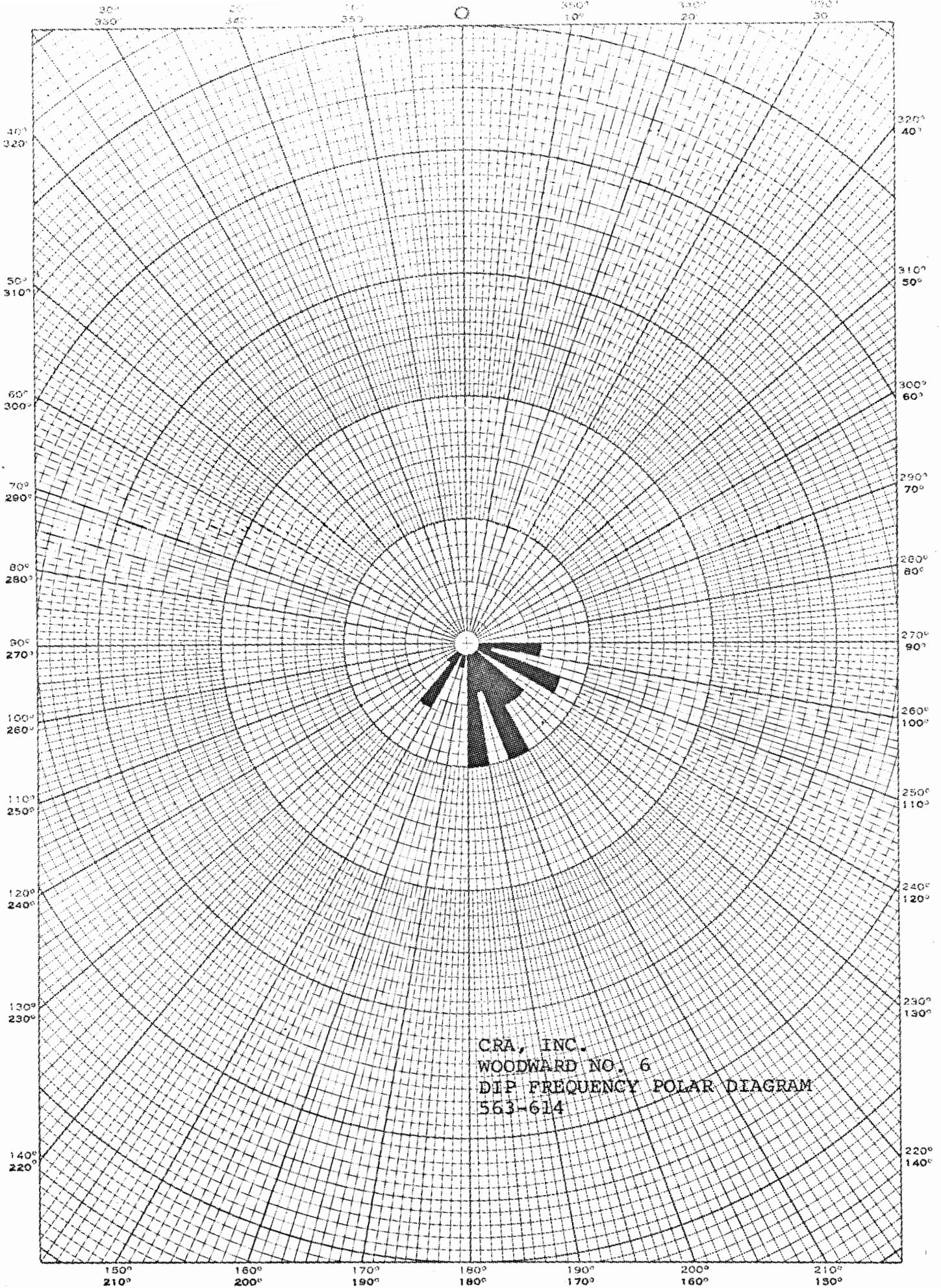
	DEPTH	DIP	AZM	BEARING	DEV	AZM
	391	3.8	276	N 84 W	0	323
	393	5.3	323	N 37 W	0	323
	394	3.9	249	S 69 W	0	323
	397	4.2	263	S 83 W	0	323
	399	5.3	263	S 83 W	0	323
	401	2.8	238	S 58 W	0	318
	403	2.1	258	S 78 W	0	318
	405	1.0	198	S 18 W	0	318
	407	3.7	174	S 6 E	0	308
	411	1.0	183	S 3 W	0	303
	413	1.0	238	S 58 W	0	298
	417	2.1	113	S 67 E	0	293
	419	3.7	94	S 86 E	0	288
	421	3.2	108	S 72 E	0	288
	423	4.7	204	S 24 W	0	288
	425	2.2	228	S 48 W	0	288
	427	5.4	168	S 12 E	0	288
	429	1.9	78	N 78 E	0	288
	431	3.8	78	N 78 E	0	288
	433	1.9	198	S 18 W	0	288
	435	4.4	48	N 48 E	0	288
	437	2.2	231	S 51 W	0	291
	439	1.1	231	S 51 W	0	291
	441	2.9	213	S 33 W	0	293
	443	2.8	268	S 88 W	0	288
	445	11.1	153	S 27 E	0	293
	447	6.6	18	N 18 E	0	293
	451	4.4	53	N 53 E	0	293
	453	2.8	93	S 87 E	0	293
	455	5.6	81	N 81 E	0	291
	459	6.7	9	N 9 E	0	293
	463	7.0	45	N 45 E	0	293
	465	5.7	33	N 33 E	0	293
	467	1.1	298	N 62 W	0	298
	469	4.7	274	N 86 W	0	298
	471	3.9	224	S 44 W	0	298
	473	4.7	277	N 83 W	0	301
	477	2.8	333	N 27 W	0	293
	478	1.0	233	S 53 W	0	293
	483	1.1	233	S 53 W	0	293
	485	1.1	228	S 48 W	0	288
	487	1.1	288	N 72 W	0	288
6	489	2.2	288	N 72 W	0	288
	491	1.9	258	S 78 W	0	288
5	493	3.7	256	S 76 W	0	286
	495	3.9	236	S 56 W	0	283
4	497	3.7	253	S 73 W	0	283
	499	1.9	253	S 73 W	0	283
3	501	1.1	343	N 17 W	0	283
	503	1.1	218	S 38 W	0	278
2	505	1.1	213	S 33 W	0	273
	507	3.2	208	S 28 W	0	268
	508	3.2	208	S 28 W	0	268

510	3.9	216	S 36 W	0	263
512	2.2	198	S 18 W	0	258
513	2.8	217	S 37 W	0	258
515	2.8	178	S 2 E	0	258
517	1.1	313	N 47 W	0	253
519	2.8	353	N 7 W	0	253
521	FLAT				
523	1.1	253	S 73 W	0	253
525	FLAT				
527	1.1	248	S 68 W	0	248
529	2.2	248	S 68 W	0	248
530	5.8	207	S 27 W	0	248
531	7.6	209	S 29 W	0	248
535	4.3	164	S 16 E	0	248
537	2.8	168	S 12 E	0	248
539	4.9	237	S 57 W	0	248
541	1.9	158	S 22 E	0	248
543	1.9	156	S 24 E	0	246
545	2.2	183	S 3 W	0	243
547	2.8	223	S 43 W	0	243
549	2.8	202	S 22 W	0	243
551	1.1	238	S 58 W	0	238
552	4.9	188	S 8 W	0	238
553	1.1	118	S 62 E	0	238
555	1.9	208	S 28 W	0	238
557	2.2	178	S 2 E	0	238
558	2.9	187	S 7 W	0	228
563	7.0	278	N 82 W	0	211
565	3.9	101	S 79 E	0	208
567	4.7	111	S 69 E	0	208
568	4.9	137	S 43 E	0	208
571	4.7	111	S 69 E	0	208
573	3.9	96	S 84 E	0	203
574	3.7	113	S 67 E	0	203
577	2.8	97	S 83 E	0	198
578	3.2	138	S 42 E	0	198
581	2.2	138	S 42 E	0	198
583	3.7	163	S 17 E	0	193
584	3.7	158	S 22 E	0	188
585	2.8	147	S 33 E	0	188
587	2.8	147	S 33 E	0	188
588	3.9	169	S 11 E	0	183
590	4.4	178	S 2 E	0	178
591	2.2	178	S 2 E	0	178
593	2.2	113	S 67 E	0	173
595	2.2	171	S 9 E	0	171
597	3.9	154	S 26 E	0	168
598	3.9	154	S 26 E	0	168
599	3.9	154	S 26 E	0	168
601	1.9	141	S 39 E	0	171
603	4.3	228	S 48 W	0	168
605	2.2	228	S 48 W	0	168
606	5.4	228	S 48 W	0	168
607	2.8	208	S 28 W	0	168
609	3.2	233	S 53 W	0	173
611	3.3	171	S 9 E	0	171
613	5.0	157	S 23 E	0	168
614	2.2	171	S 9 E	0	171
615	2.2	173	S 7 E	0	173
617	2.2	173	S 7 E	0	173
618	1.1	178	S 2 E	0	178
619	2.2	183	S 3 W	0	183
621	3.9	156	S 24 E	0	203
623	1.9	118	S 62 E	0	208
625	1.9	178	S 2 E	0	208
626	2.2	148	S 32 E	0	208

	627	3.9	161	S 19 E	0	208
	629	5.5	178	S 2 E	0	208
	633	1.1	308	N 52 W	0	188
	635	6.1	119	S 61 E	0	188
	637	2.9	163	S 17 E	0	183
	638	2.2	123	S 57 E	0	183
	639	2.9	197	S 17 W	0	178
	641	1.1	58	N 58 E	0	178
	642	1.1	238	S 58 W	0	178
	643	1.1	58	N 58 E	0	178
	645	2.2	178	S 2 E	0	178
	647	2.2	118	S 62 E	0	178
	648	3.9	131	S 49 E	0	178
	649	13.4	314	N 46 W	0	178
	651	1.1	303	N 57 W	0	183
	653	1.9	328	N 32 W	0	178
	655	1.9	268	S 88 W	0	178
	657	2.2	298	N 62 W	0	178
	658	2.9	257	S 77 W	0	178
	659	1.9	268	S 88 W	0	178
	660	3.3	233	S 53 W	0	173
	663	2.9	211	S 31 W	0	171
	664	1.9	138	S 42 E	0	168
	665	3.3	168	S 12 E	0	168
	667	4.4	168	S 12 E	0	168
	668	5.0	178	S 2 E	0	168
	669	3.3	168	S 12 E	0	168
	671	9.4	189	S 9 W	0	166
	675	11.4	23	N 23 E	0	163
	679	6.5	98	S 82 E	0	158
	681	1.1	218	S 38 W	0	158
	683	1.9	248	S 68 W	0	158
	685	3.9	236	S 56 W	0	163
	688	3.3	346	N 14 W	0	166
	691	3.8	308	N 52 W	0	158
	693	5.7	308	N 52 W	0	158
	695	5.0	327	N 33 W	0	158
	697	3.9	324	N 36 W	0	158
	698	2.9	263	S 83 W	0	163
	700	1.1	343	N 17 W	0	163
	701	1.1	283	N 77 W	0	163
	703	2.9	263	S 83 W	0	163
	705	2.9	323	N 37 W	0	163
	707	3.8	313	N 47 W	0	163
	709	1.9	313	N 47 W	0	163
	711	1.1	343	N 17 W	0	163
	713	1.9	68	N 68 E	0	158
	717	2.2	343	N 17 W	0	163
	718	4.7	319	N 41 W	0	163
	719	6.8	326	N 34 W	0	163
	721	3.8	313	N 47 W	0	163
	723	7.1	330	N 30 W	0	158
	726	5.4	343	N 17 W	0	163
	728	5.0	327	N 33 W	0	158
	729	3.9	324	N 36 W	0	158
6	733	5.8	357	N 3 W	0	158
	735	3.8	8	N 8 E	0	158
5	737	2.2	333	N 27 W	0	153
	739	1.1	323	N 37 W	0	143
4	741	2.9	37	N 37 E	0	138
	745	2.2	316	N 44 W	0	136
3	748	1.9	278	N 82 W	0	128
	751	1.1	306	N 54 W	0	126
2	753	5.0	355	N 5 W	0	126
	755	2.9	218	S 38 W	0	118
	757	10.6	188	S 8 W	0	113

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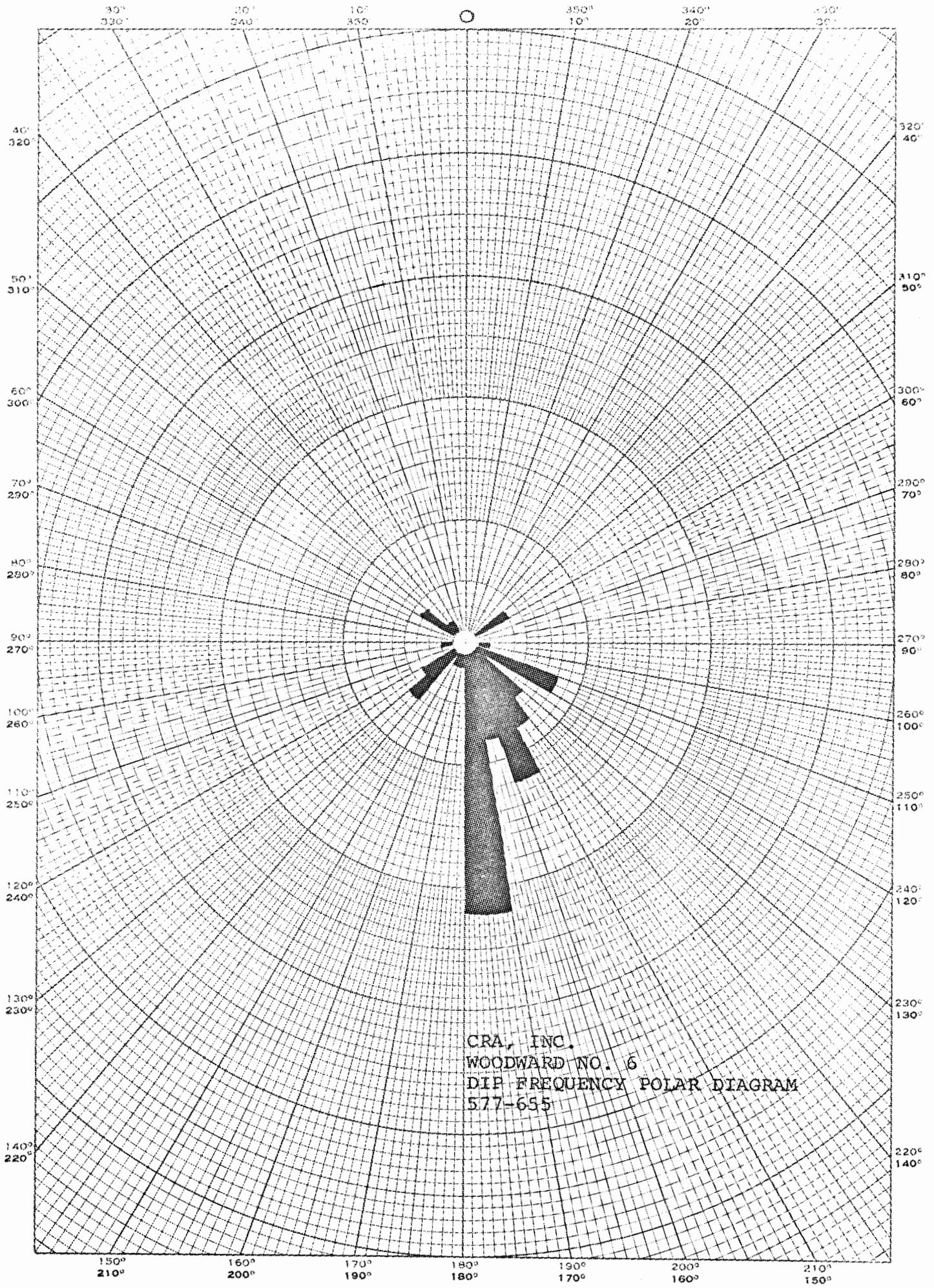
40-P DIETZGEN GRAPH PAPER
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563-614

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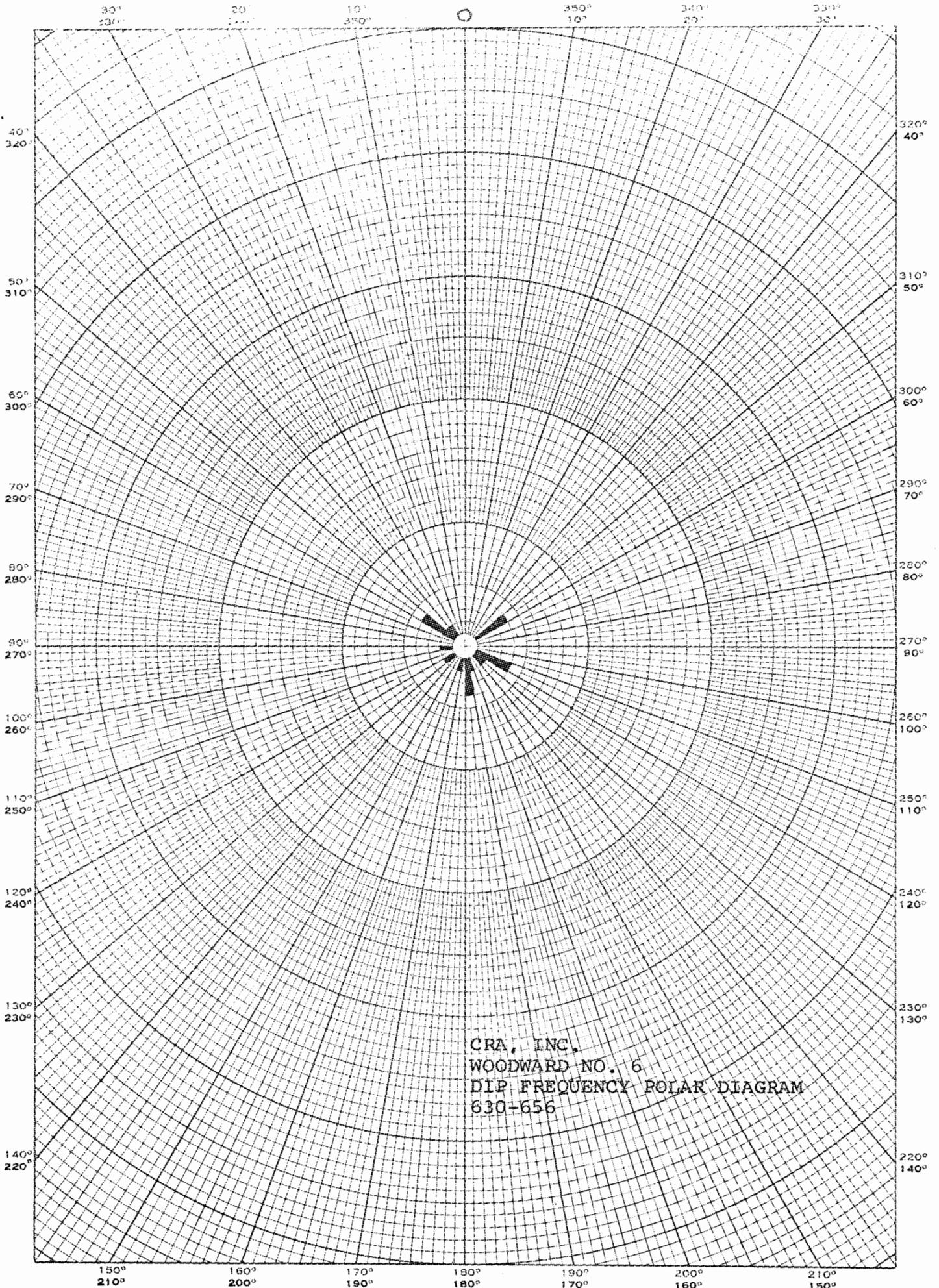
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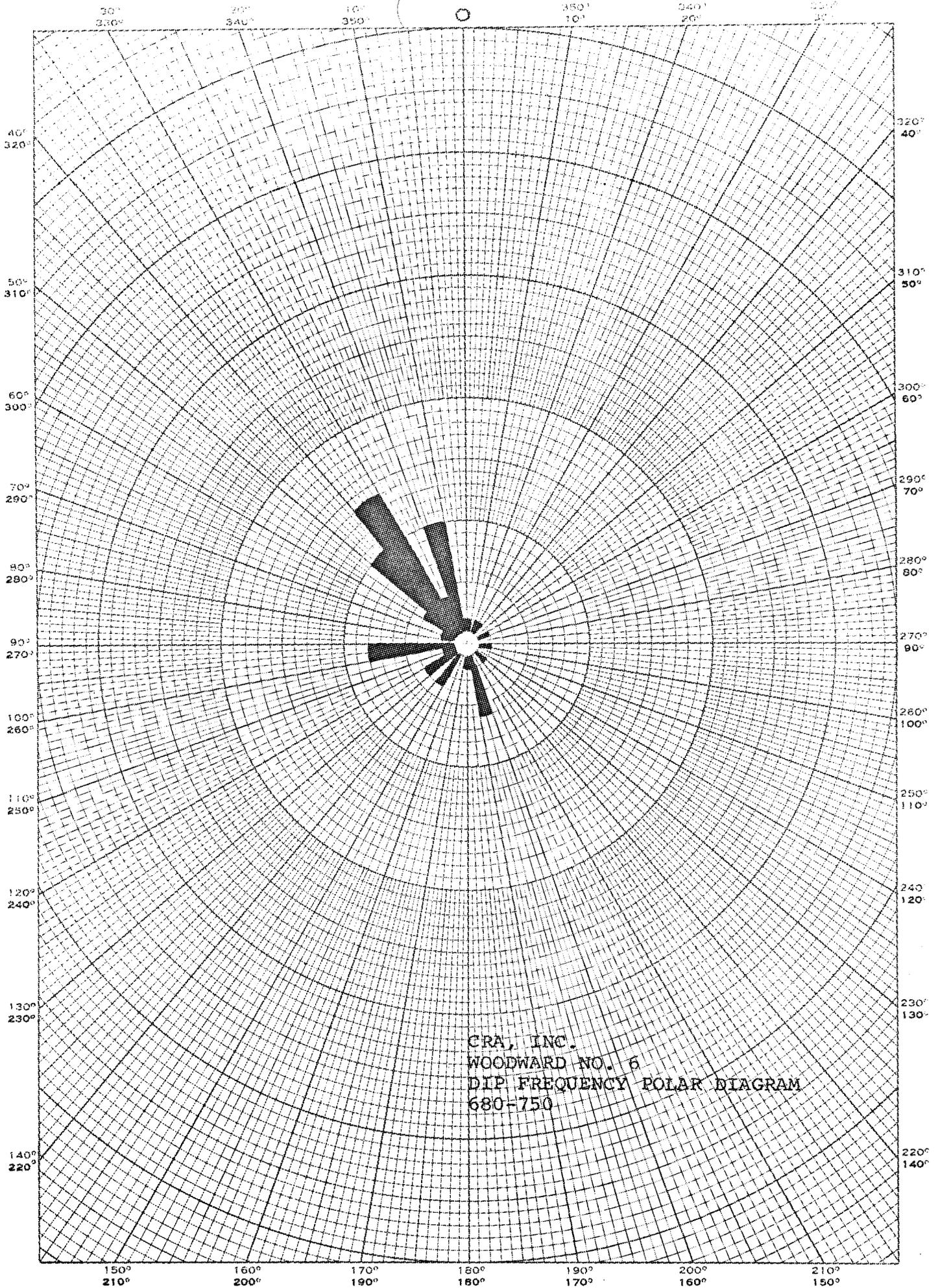
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