



SEP 1 1966

CRA, INC.

WOODWARD NO. 13, 15, 16, 18, 19, & 27-I

DIPMETER REPORT

BRONSON Field

Computer Inventoried



SCHLUMBERGER WELL SERVICES

A DIVISION OF SCHLUMBERGER TECHNOLOGY CORPORATION

8000 GULF FREEWAY P. O. BOX 2175 HOUSTON, TEXAS 77001

August 25, 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 Wells Nos. 13, 15, 16, 18, 19, and 27-I, Bourbon County, Kansas. 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 discussed below.

Originally we had called the Bartlesville Sand in wells No. 2, 4, 8, and 9 a bar sand because the geometry derived from the dipmeters on them described a curved upper surface. It now appears the Bartlesville Sand in all of the Woodward wells has both a curved upper and lower surface. The dipmeter data on Wells 13, 15, 16, 18, 19, and 27-I all describe the sand as a channel cut and fill system with a curved upper surface. The strike information derived is valid whether the sand system is a bar type or channel cut and fill system. The direction toward thickening sand will vary 180 degrees if the wrong assumption is made. Subsequent drilling has proved that this is a channel cut and fill system.

The following strike and direction of sand thickening were derived assuming the system is a channel cut and fill:

Woodward No. 13 strikes N20W-S20E and thickens S70W.

Woodward No. 15 strikes N10W-S10E and thickens S80W.

Woodward No. 16 strikes N20E-S20W and thickens N70W.

Woodward No. 18 strikes N20E-S20W and thickens N70W.

Woodward No. 19 strikes N20E-S20W and thickens S70E.

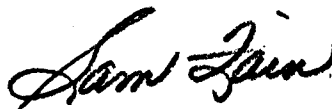
Woodward No. 27-I strikes N20E-S20W and thickens S70E.

Further development should be along a strike direction of N20E.

August 25, 1966

The interpretation 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.

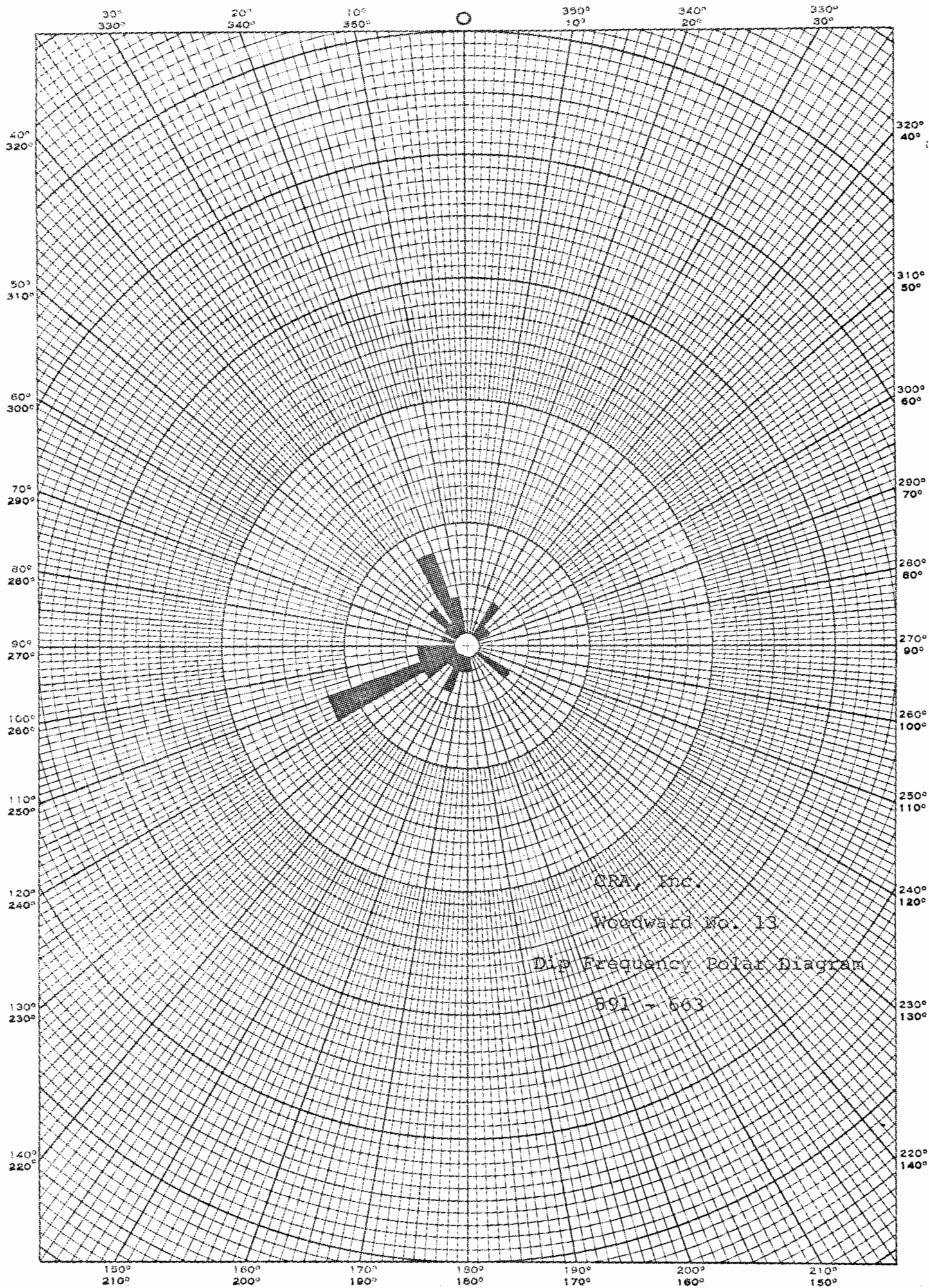
A handwritten signature in cursive script, reading "Sam Fain".

Sam Fain

SF:ep

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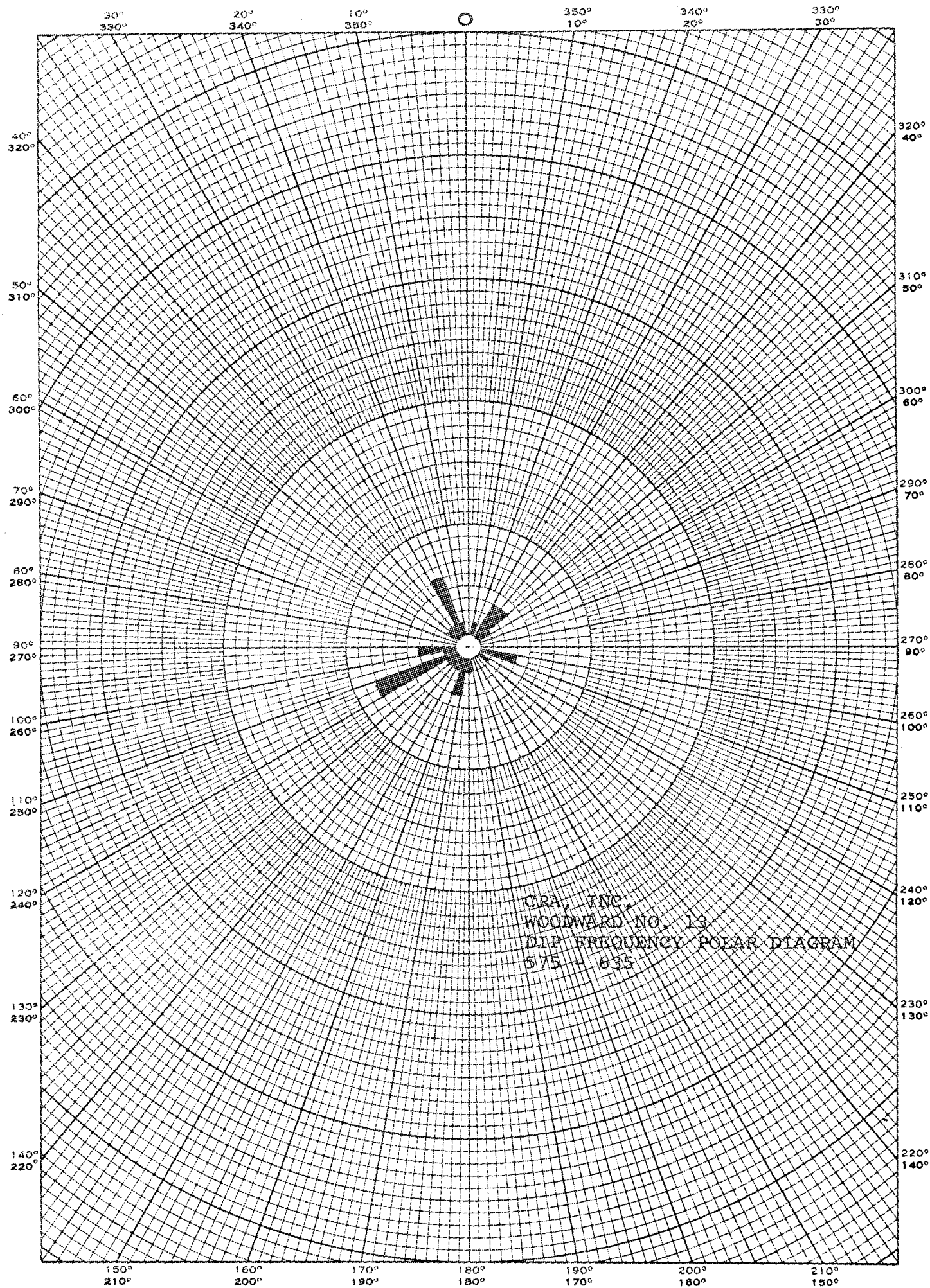
GRA, Inc.

Woodward No. 13

Dip Frequency Polar Diagram

591 - 563

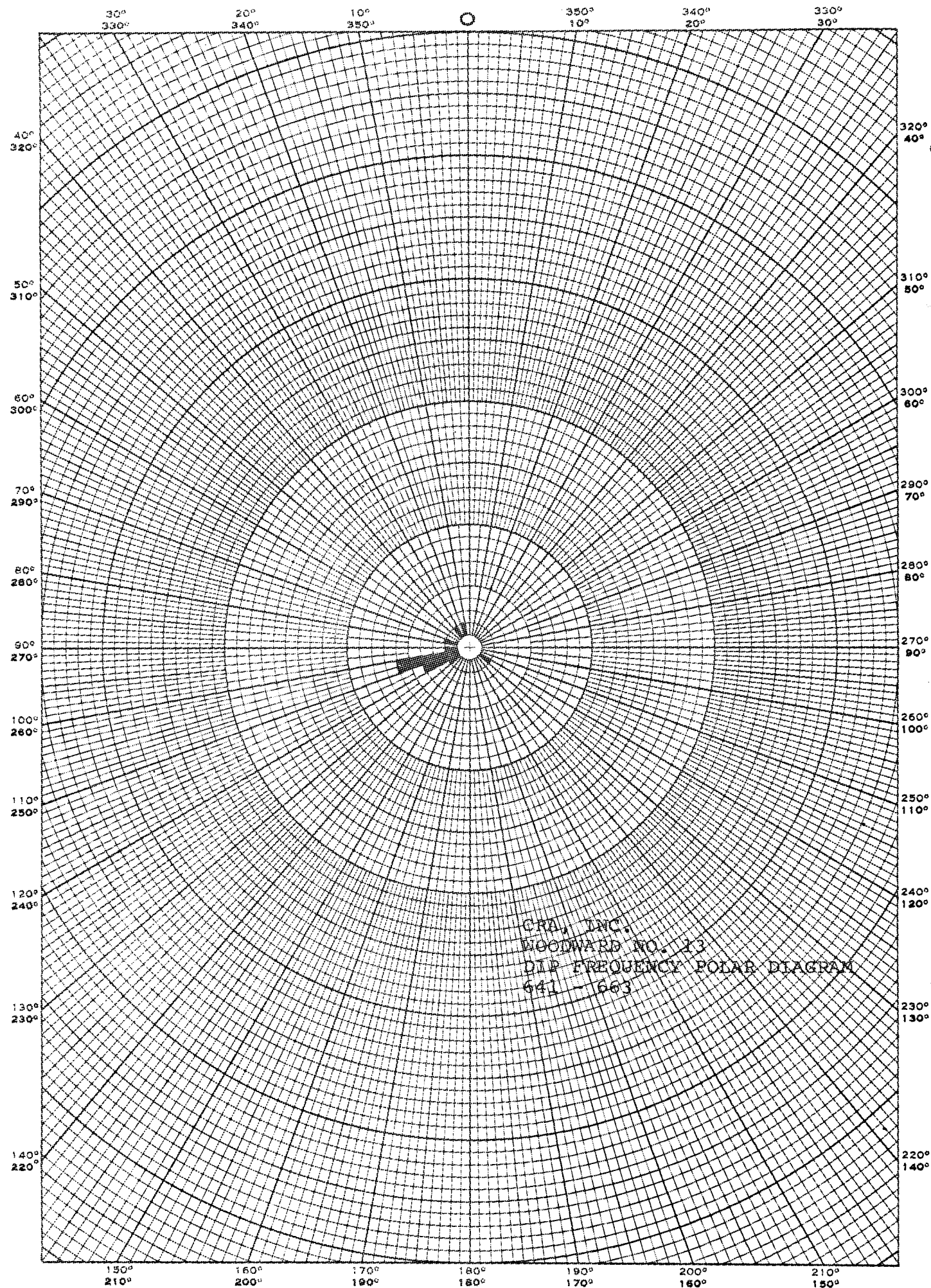
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CRA, INC.
WOODWARD NO. 13
DIP FREQUENCY POLAR DIAGRAM
575 - 635

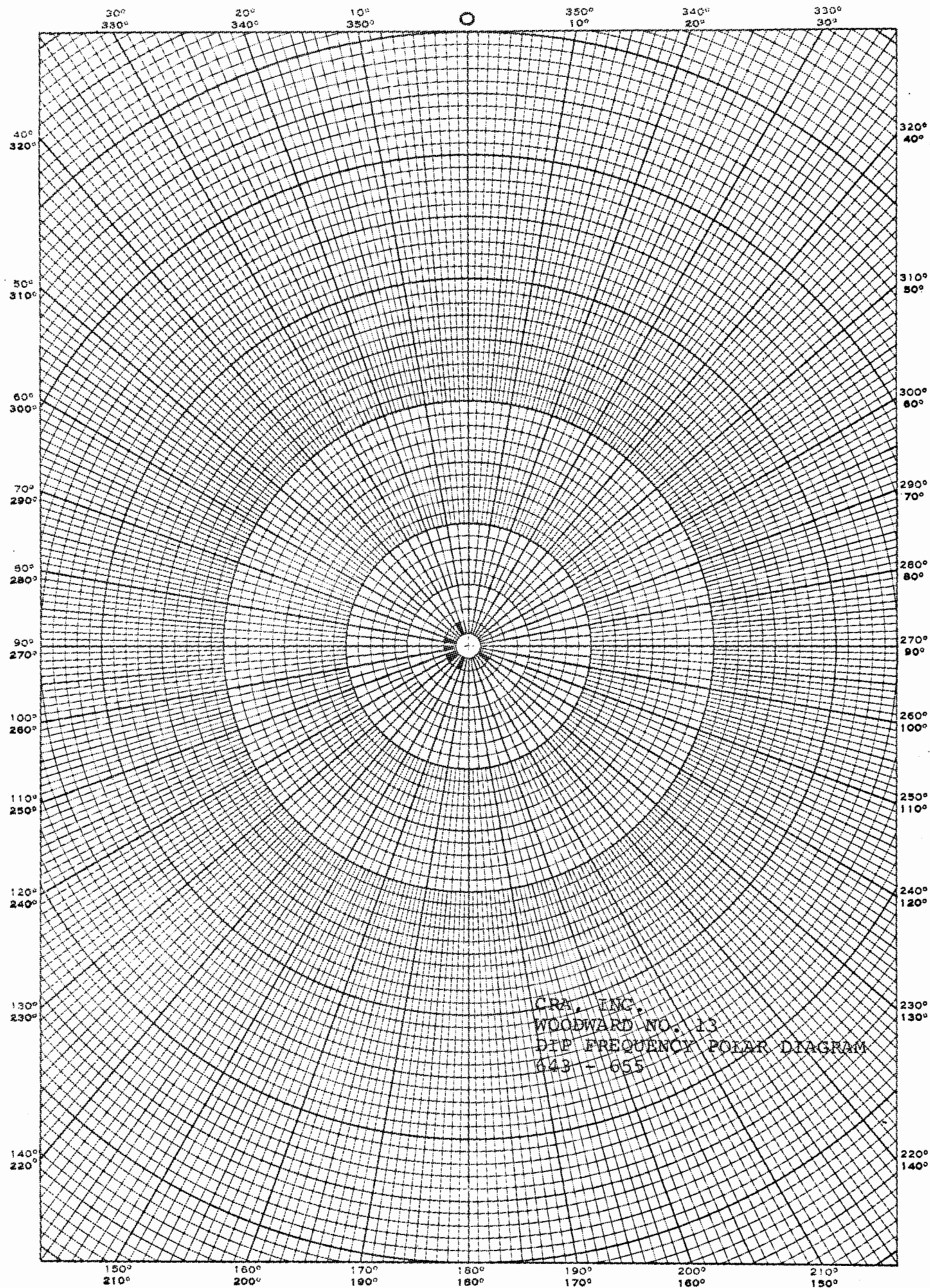
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C. R. A., INC.; WOODWARD NO. 13; BRONSON FIELD; BOURBON COUNTY, KANSAS

<u>DEPTH</u>	<u>DIP</u>	<u>DIP AZIMUTH</u>	<u>DEPTH</u>	<u>DIP</u>	<u>DIP AZIMUTH</u>
401	2	228	521	1	211
403	1	318	523	1	211
405	1	318	525	3	168
407	1	198	527	1	151
409	1	198	529	4	166
411	0	FLAT	531	2	91
413	2	113	533	3	129
415	1	143	537	1	153
417	1	203	539	2	181
419	1	323	541	0	FLAT
422	3	303	542	3	112
423	3	157	545	3	112
427	1	128	547	3	183
429	1	248	549	2	193
433	3	198	550	1	218
435	1	238	555	1	223
437	2	88	557	2	193
439	1	298	559	2	193
441	1	178	561	1	163
443	0	FLAT	563	1	103
445	2	178	565	3	108
447	2	268	567	3	127
449	1	298	568	2	138
451	1	298	569	2	318
453	1	298	571	1	173
455	1	358	575	2	238
457	4	322	577	4	268
459	2	358	579	3	258
463	14	19	581	2	178
467	2	348	583	1	48
468	3	149	584	2	18
469	1	228	585	2	108
471	3	188	587	2	108
473	3	307	588	2	198
477	3	143	591	4	35
481	1	103	593	3	123
483	1	98	595	4	45
484	1	98	597	4	33
487	0	FLAT	599	2	213
489	2	218			
491	1	218	602	3	208
493	3	178	604	3	248
497	2	278	607	3	248
499	1	278	608	6	248
			609	4	261
501	1	218	611	3	248
503	2	248	613	4	223
505	2	158	615	3	186
507	2	218	617	6	195
509	1	218	619	4	349
511	1	273	621	6	333
513	2	183	623	6	317
515	1	153	625	7	332
517	2	153	627	7	356
519	2	153	629	5	332

C. R. A., INC.; WOODWARD NO. 13; BRONSON FIELD; BOURBON COUNTY, KANSAS

<u>DEPTH</u>	<u>DIP</u>	<u>DIP AZIMUTH</u>
632	1	53
633	2	323
635	11	300
641	8	311
643	7	289
647	3	339
649	3	128
651	1	248
653	2	208
654	2	238
655	2	268
657	4	247
659	4	258
661	3	253
663	3	233
665	3	238
666	2	238
667	3	238
669	3	238
671	3	238
673	5	167
674	8	201
676	1	58
677	2	328
679	1	248
681	1	58
683	0	FLAT
684	2	178
685	4	178
687	3	238
689	5	238
691	2	238
693	2	358
695	2	358
697	1	238