SOFTWARE VALIDATION TEST FOR STEREONET FOR WINDOWS, VERSION 3.0

Prepared for

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1 SCOPE OF THE VALIDATION

This document establishes the Software Validation Test for validating the functionality of the code StereoNet, Version 3.0. StereoNet, Version 3.0, is designed for plotting and display of stereographic projections of linear or planar data (e.g., faults, fractures) and the construction of rose diagrams. The program uses this data in a text file format. The validation tests are designed to ensure that StereoNet, Version 3.0, is correctly displaying stereonets and rose diagrams as compared to conventional methods.

2 REFERENCES

Steinsund, P.I. "StereoNet Version 3.0 for Windows User's Guide." Tromsø, Norway: Geological Software. 1995.

3 ENVIRONMENT

3.1 Software

StereoNet, Version 3.0, is commercially available software developed by Geological Software, Varden 94, N-9018 Tromsø, Norway. Version 3.0 runs in Windows 3.1 or higher operating system. The following software items were used to perform the testing activities:

(i) StereoNet, Version 3.0 software
(ii) Windows 3.1 or higher operating system

3.2 Hardware Requirements

Validation testing for StereoNet, Version 3.0, was performed on a 286 or higher microprocessor PC, with a minimum of 2Mb of computer memory and Windows graphics capability. Input information was in text file formats (see Appendices A and B) and output information was saved on the computer hard drive. The only peripheral devices needed were a printing and/or plotting device, configured as per normal settings in the Windows control panel, used to help validate results.

4 PREREQUISITES

Running StereoNet, Version 3.0, requires installation of the commercially available software, per the developers' User's Manual.

5 ASSUMPTIONS AND CONSTRAINTS

The user of StereoNet, Version 3.0, is assumed to be familiar with fault and fracture data as displayed in rose diagrams and stereonets and with the construction of rose diagrams and stereonets.

6 TEST CASES

The test cases described in this section involve comparisons of plots, such as fault planes and poles of the planes, created from StereoNet, Version 3.0, to measurements manually plotted using conventional methods.

6.1 Test Case 1 – Verifying Accuracy of Plotted Stereonets

The accuracy of plotted stereonets, such as fault planes and poles of the planes, were checked by comparing to measurements manually plotted using conventional methods.

6.1.1 Test Input

The StereoNet file Pole_plane.txt (See Appendix A: Pole_p~1.txt) consists of five (5) strike and dip measurements.

6.1.2 Test Procedure

After opening StereoNet, open the file Pole_plane.txt. Using the Graphic menu, choose the option for Plane. This will plot the test fault planes. Under the Calculate menu, select the option for Pole to Plane. Under the Graphic menu, choose the option for Point to plot the poles to the test fault planes.

6.1.3 Test Results

Once StereoNet plotted the strike and dip measurements, they were visually compared to measurements that were manually plotted using conventional methods. No visually apparent discrepancies were noted.

6.2 Test Case 2 – Verifying Rose Diagrams

Rose diagrams represent the percent of faults in a strike azimuth or in a range of strike azimuths. Comparison of plots created by StereoNet to manually plotted diagrams using conventional methods were used to determine the accuracy.

6.2.1 Test Input

The StereoNet file Rosedi~1.txt (attached) consists of 14 strike and dip measurements.

6.2.2 Test Procedure

After opening StereoNet, open the file Rosedi~1.txt (See Appendix B). This file contains 14 measurements within two percentage categories. Using the Graphic menu, choose the option for Rose Diagram. The Rose Diagram window allows the user to define the diagram parameters. For this test, the following parameters were used: Number of sectors = 36; Number of rings = 4; Scale of ring = 40 (equal to the radius of the ring); Arrow size = 3 (default). The following options were selected: Pie Slice, Bidirectional, Scale, and Degree ticks.

6.2.3 Test Results

Once StereoNet plotted the rose diagram, it was compared to the known percentages of strike direction of input data. No apparent discrepancies were noted.

APPENDIX A

Pole_p~1.txt

STRIKE	DIP
152	20
332	40
154	60
334	80
156	90

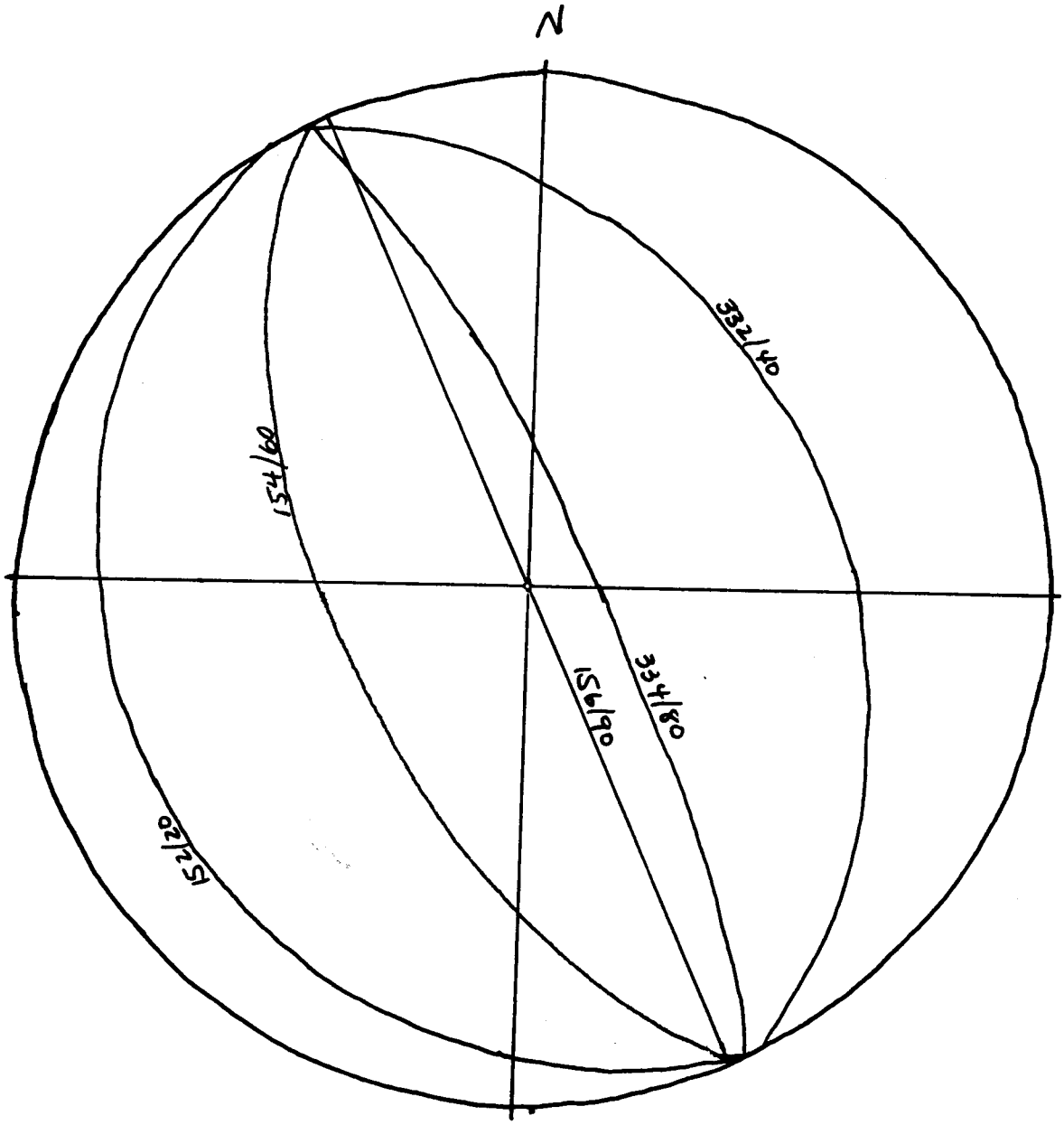
The file format for data is a Text file. The first line is the title of the data set. The rest of the lines are data. These include two columns with strike and dip separated by one or more blank spaces or a tabulator. When StereoNet saves data to files, it uses a tabulator as a delimiter. The user can use an editor such as Notepad in Windows for creating text files to make the data files. It is recommended that the data files have the filename extension txt.

APPENDIX B

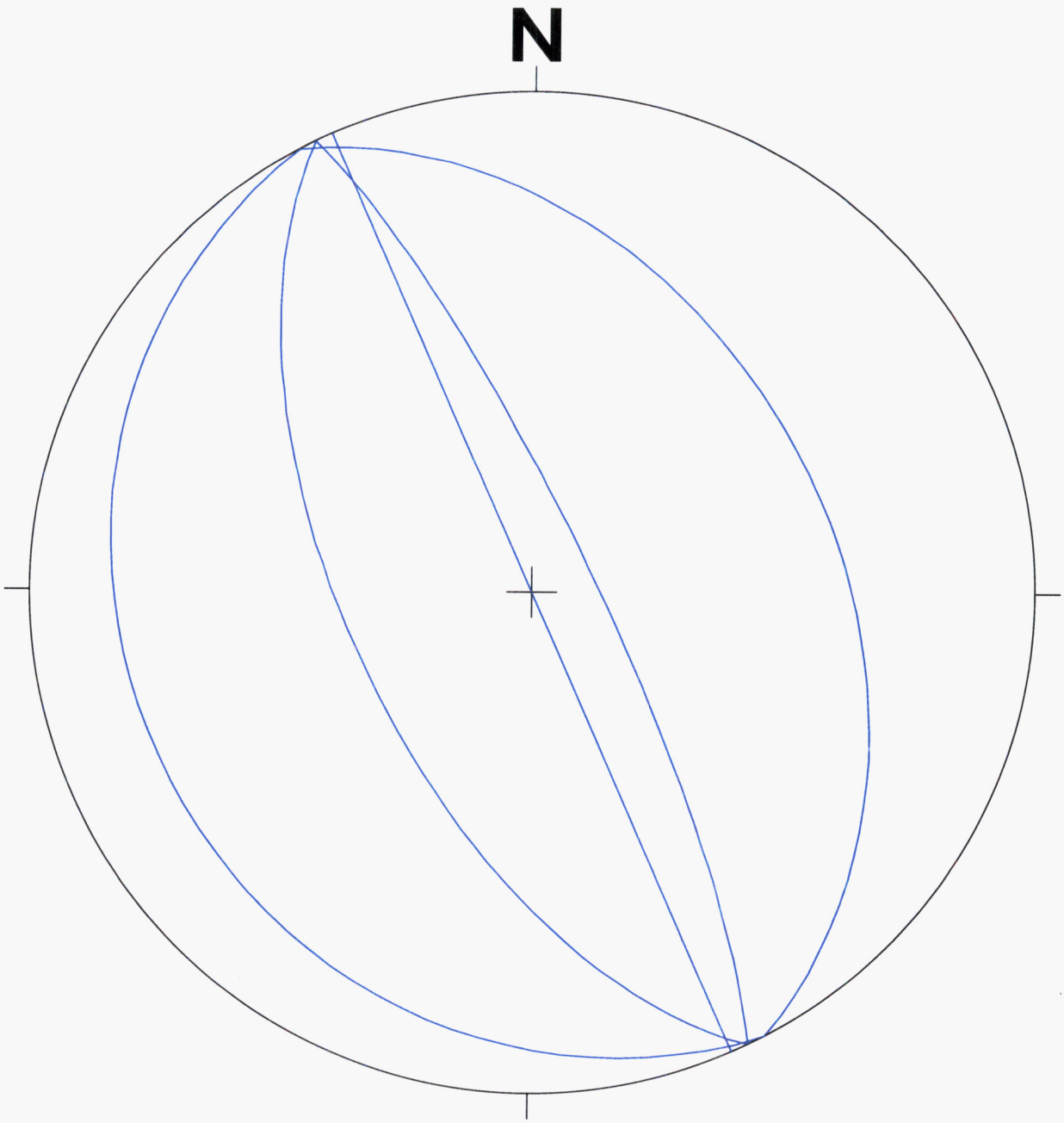
Rosedi~1.txt

STRIKE	DIP
230	20
55	40
235	40
52	60
232	60
58	80
238	80
55	50
235	50
152	20
332	40
154	60
334	80
156	90

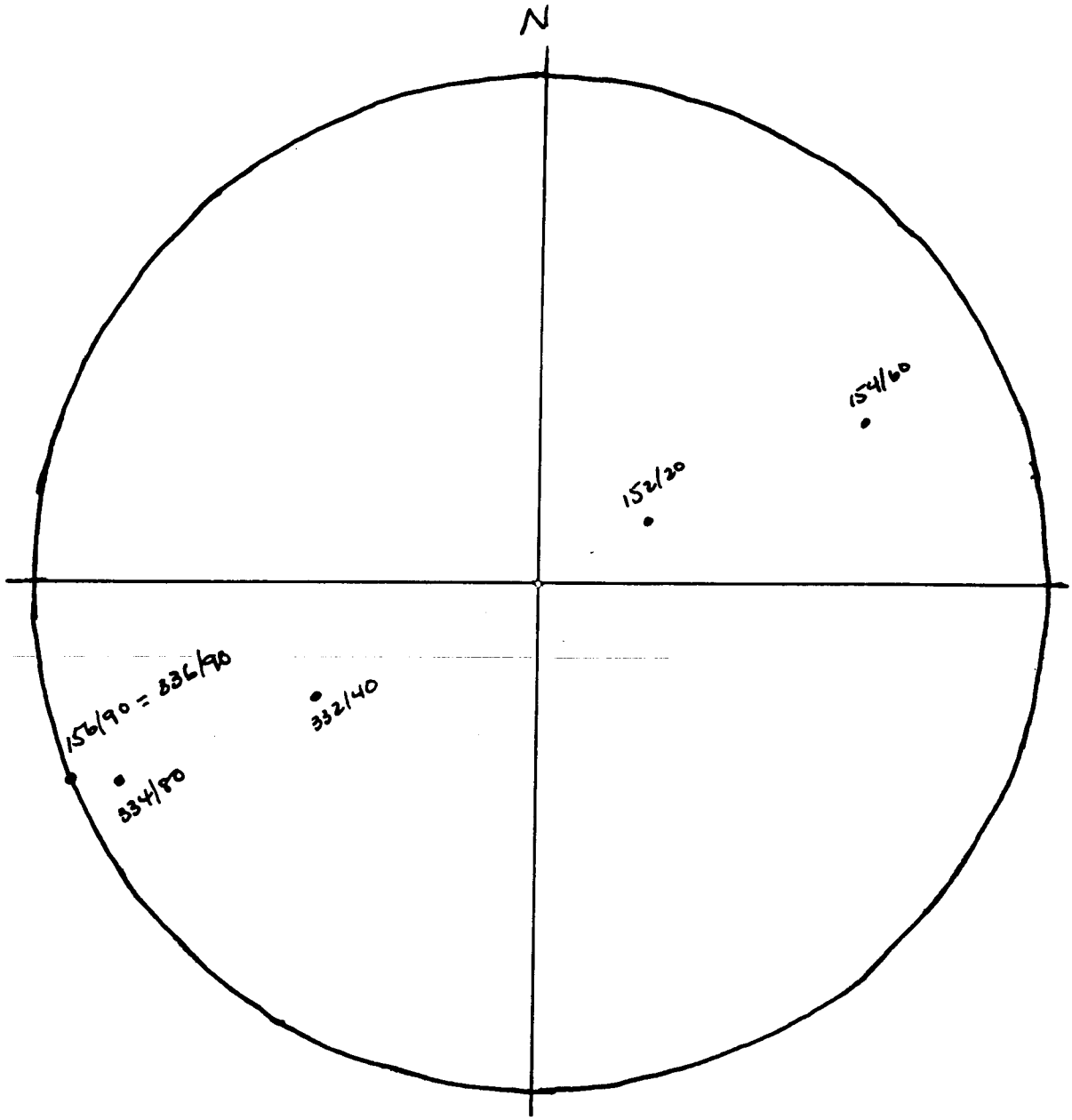
The file format for data is a Text file. The first line is the title of the data set. The rest of the lines are data. These include two columns with strike and dip separated by one or more blank spaces or a tabulator. When StereoNet saves data to files, it uses a tabulator as a delimiter. The user can use an editor such as Notepad in Windows for creating text files to make the data files. It is recommended that the data files have the filename extension txt.



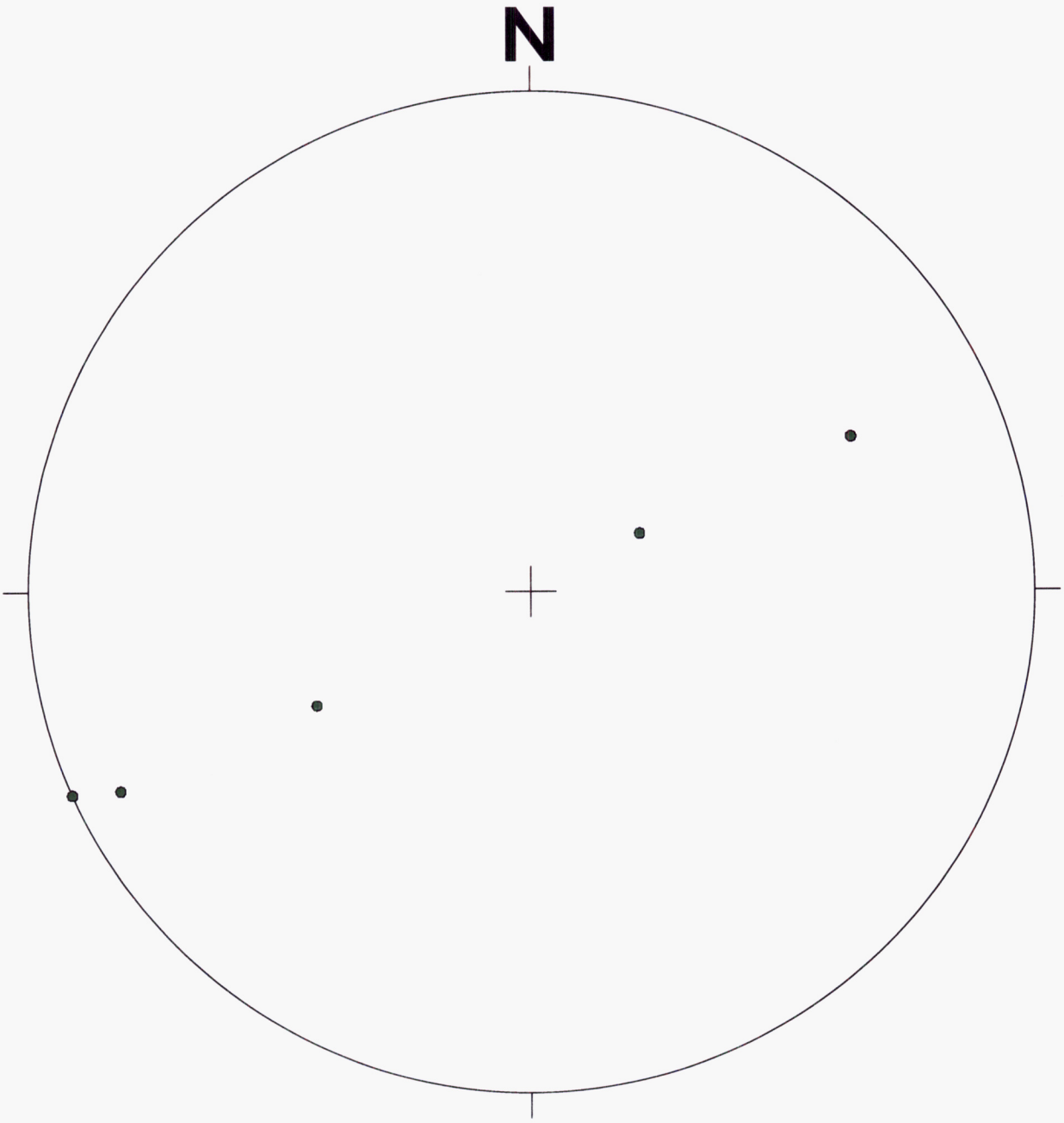
PLANES



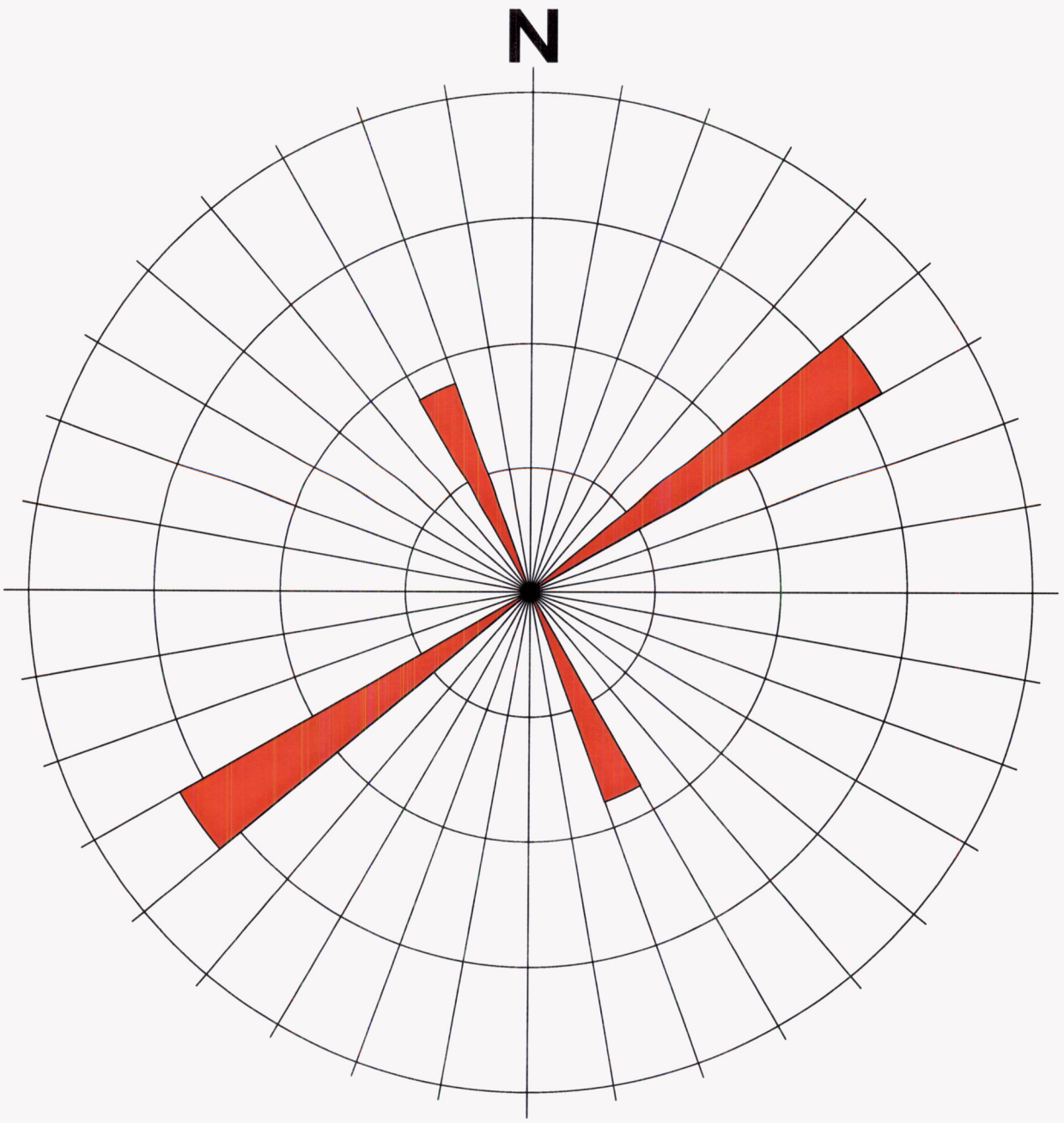
Lower hemisphere - Planes			
N=5			



POLES TO PLANES



Lower hemisphere - Poles			
N=5			



Lower hemisphere - Rose Diagram			
N=14			