ORIENTED DRILL CORE PROTRACTOR TEMPLATES

CONTENTS

• Wrap around beta angle protractors for most common core sizes
• Wrap-around alpha/beta angle protractor for HQ and NQ core
• Scaled logging sheets for simplified rapid logging

These templates are the printer-resolution attachment to the Holcombe Coughlin Oliver publication: “HCO_oriented_core_procedures”, which can be downloaded from:

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ORIENTED DRILL CORE WRAP-AROUND PROTRACTORS

Each of the following pages contains a protractor for a specific size of drill core formatted for printing using a laser printer on to A4 medium such as stiff plastic film. (Laser printers give a finer, more durable line than most ink-jet printers). I use HiClear™ Crystal Clear 200 micron PVC Report Cover for the film).

Check the core diameter to choose the appropriate template within each core size grouping. The protractors are in two groups: beta angle protractors and alpha/beta angle protractors. In practice I find that the beta angle protractor alone is best as it is least cluttered with lines (and alpha angles are easily measured using a protractor).

IMPORTANT
In order to preserve the correct scale print on A4 paper and ensure that all scaling is switched off in both the printing software (e.g. Adobe Reader) and in the printer settings. That is, look for settings such as ‘Actual size’, ‘Normal size’ or ‘no scaling’ in both the software printing settings and in the printer properties.

After printing check that the length of the scale along the base of the protractor is equal to the circumference of the core.

For protractors that also have alpha curves also check that the height of the plot (between the base scale-line and the top scale line is equal to half of the width of the plot. (The reason this is so is because the top scale line is set to correspond to the point where the 45° alpha angle curve intersects the 180° beta line. For planes with a 45° alpha angle the height above the base scale will be equal to the diameter of the core – and this occurs at a beta angle of 180).

To use the protractor

beta angles
Align the reference line (can be either a ‘bottom’ mark or ‘top’ mark) with the central zero line - ensuring that the ‘downhole’ arrows point down the core.
Wrap the protractor around the core
Read off the clockwise 360° beta angles to the ellipse (beta angle) using the spaced vertical lines.

alpha angles using alpha angle protractor
Align the reference line with the bottom of the ellipse made by the plane to be measured.
Wrap the protractor around the core.
Use the curved alpha angle lines to estimate the angle between the ellipse and the core axis (alpha angle).

Making your own:

It is a relatively simple matter to construct a wrap-around protractor to measure beta angles in oriented core using any software drawing package. The procedure is to measure the circumference of the core and divide it by 360 to calculate the spacing of a 1-degree beta angle. A set of parallel lines is then drawn, using a convenient spacing (eg. 10 degrees).

Custom-scaling from one template to another
Not all drillcore sizes are shown here. However it is possible to use any of these templates and scale them to another size using the ratio of the core circumferences as the scaling factor. For example, HQ core is 199.49 mm in circumference and NTW core is 179.38 mm in circumference. There is no combined alpha-beta protractor shown here for NTW core but one can be printed by setting a print scaling factor of 89.91% (179.38/199.49 x 100).
NQ (47.6 mm diam; 149.54 mm circumference)
NQ (47.6mm diam; 149.54 mm circumference)

Oriented core wrap-around protractors

Holcombe Coughlin Oliver, 2014
NQ (47.6 mm diam; 149.54 mm circumference)

Oriented core wrap-around protractors

http://www.holbecoughlinoliver.com/
NQ2" (50.6 mm diam; 158.96 mm circumference)
NQ2" (50.6 mm diam; 158.96 mm circumference)

Oriented core wrap-around protractors

http://www.holcombecoughlinoliver.com
NQ2" (50.6mm diam; 158.96 mm circumference)
Oriented core wrap-around protractors

Holcombe Coughlin Oliver, 2014
NQ variant (48.8mm diam; 151.11mm
(151.11 mm circumference)

Oriented core wrap-around protractors

http://www.holcombecoughlinoliver.com/
BTW (42mm diam; 131.95mm circumference)

Oriented core wrap-around protractors  
Holcombe Coughlin Oliver, 2014
Oriented core wrap-around protractors

Holcombe Coughlin Oliver, 2014

NTW (57.1mm diam; 179.38mm circumference)
Oriented core wrap-around protractors

Holcombe Coughlin Oliver, 2014
Oriented core wrap-around protractors

Holcombe Coughlin Oliver, 2014
HQ variant (62.1 mm diam; 195.09 mm)

Oriented core wrap-around protractors 17 Holcombe Coughlin Oliver, 2014

http://www.holcombecoughlinoliver.com/
HQ-3 (61.1 mm diam; 191.95 mm circumference)

 Oriented core wrap-around protractors
Holcombe Coughlin Oliver, 2014

http://www.holcombecoughlinoliver.com/
HQ3 (61.1 mm diam; 191.95 mm circumference)

Oriented core wrap-around protractors

Holcombe Coughlin Oliver, 2014

http://www.holcombecoughlinoliver.com/
HTW (71mm diam; 223.05mm circumference)
Oriented core wrap-around protractors

(beta angle protractor)

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Oriented core wrap-around protractors

(83 mm diameter)
(260.75 mm circumference)

Beta angle protractor

Holcombe Coughlin Oliver, 2014

http://www.holcombecoughlinoliver.com/
LOW RESOLUTION LOGGING TEMPLATES
The following pages contain logging templates at different scales for rapid low resolution summary logging of drill-core.
ABOUT US:

Holcombe Coughlin Oliver is a consortium of three independent international geological consultancies (European and Australian-based) specialising in the application of modern structural geology and hydrothermal fluid geochemistry to the global resource industry

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Rod Holcombe (PhD) has over 40 years of structural analysis experience in orogenic systems as both a teaching/research academic and a consultant to the minerals exploration industry. He is a specialist in the structural analysis and 3D modelling of complex metamorphic terranes and shear zones with experience in Precambrian and Phanerozoic terranes in Australia, New Zealand, USA, Brazil, Argentina, Peru, Uruguay, Thailand, Laos, East and West Africa, the Balkans, Finland, and Siberia, and has considerable experience in structural and mapping short course training for professional geologists. Computer applications, manuals, and other products developed by Rod for use by structural and exploration geologists can be found at: http://www.holcombe.net.au/software/

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Tim Coughlin (MSc, PhD) is a structural geologist with particular experience in frontier target generation and risk analysis in emerging and developing countries. Tim has over 25 years of both mineral and petroleum exploration experience. He has worked on target-generation and deposit-scale problems in the central and northern Andes, the western Tethyan of the Balkans and Caucasus regions, the Papuan fold belt, northern China, Siberia and the Russian Far East, and eastern Australia. Tim has consulted to a wide range of resource industry clients, has held senior staff positions with well-known medium and large-scale companies, and has successfully guided an international exploration company from start-up to development.

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Nick Oliver (PhD) is a specialist in mineralised hydrothermal systems, particularly in strongly structured environments. Experience includes IOCG, U and Mo (Mount Isa region), sediment and volcanic-hosted base metals (Century Zn, Mount Isa Cu-Pb-Zn, Chillagoe skarn Cu-Zn-Au, Finland Zn-Cu), greenstone-, BIF- and black slate-hosted vein gold deposits (Yilgarn, Brazil, Siberia), giant iron ores (Pilbara, Transvaal), and epithermal gold (New Zealand, Australia). Nick provides practical approaches to deal with complex alteration systems, restructuring of geochemical datasets and strategies, and identification of fluid pathways in complexly deformed rocks. He has 20 years experience in industry-based research and focussed short course training, including 13 years as the Professor of Economic Geology and Director of the Economic Geology Research Unit at James Cook University.