Option Explicit

'————————————————————————————————————————————————————————————

' CYCLIC SIMPLE SHEAR (CSS) MACRO – Single-Sheet Version

' All consolidation + cyclic plots, loops, and ±5/±10/±15% summary

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' ASSISTED BY: GPT

'————————————————————————————————————————————————————————————

Sub RobustCyclicSSProcessing()

Dim fd As FileDialog

Dim cycFile As String

Dim cdssFiles As Collection

Dim vItem As Variant

Dim cycWb As Workbook

Dim cycS As Worksheet

Dim cdssWb As Workbook

Dim cdssS As Worksheet

Dim outWb As Workbook

Dim outS As Worksheet

Dim origHeight As Double

Dim base As String

Dim cStart As Long, cEnd As Long

' 1) Collect all CDSS files

Set cdssFiles = New Collection

Set fd = Application.FileDialog(msoFileDialogFilePicker)

With fd

.Title = "Select CDSS file(s)"

.Filters.Clear

.Filters.Add "CSV/Excel Files", "\*.csv;\*.xls;\*.xlsx;\*.xlsm"

.AllowMultiSelect = True

If .Show <> -1 Then Exit Sub

For Each vItem In .SelectedItems

cdssFiles.Add CStr(vItem)

Next

End With

' 2) Then pick the default.cyc file

With fd

.Title = "Now select the default.cyc file"

.AllowMultiSelect = False

If .Show <> -1 Then Exit Sub

cycFile = CStr(.SelectedItems(1))

End With

' 3) Open default.cyc

Set cycWb = Workbooks.Open(cycFile)

Set cycS = cycWb.Sheets(1)

' 4) Create output workbook

Set outWb = Workbooks.Add(xlWBATWorksheet)

' 5) Loop each CDSS file

For Each vItem In cdssFiles

Set cdssWb = Workbooks.Open(vItem)

Set cdssS = cdssWb.Sheets(1)

' 5a) Read specimen height from B11

origHeight = Val(cdssS.Cells(11, "B").Value)

If origHeight <= 0 Then

MsgBox "Invalid specimen height in: " & vItem, vbExclamation

cdssWb.Close False: GoTo NextFile

End If

' 5b) Prepare one output sheet

base = SafeSheetName(GetBaseName(cdssWb.Name))

On Error Resume Next: Set outS = outWb.Sheets(base): On Error GoTo 0

If outS Is Nothing Then

Set outS = outWb.Sheets.Add(after:=outWb.Sheets(outWb.Sheets.Count))

outS.Name = base

Else

outS.Cells.Clear

End If

' 5c) Find consolidation/cycle markers

cStart = FindRow(cdssS, "Consolidation stages")

cEnd = FindRow(cdssS, "Cycle shear stages") - 1

If cStart <= 0 Or cEnd <= cStart Then

MsgBox "Cannot locate stages in: " & vItem, vbExclamation

cdssWb.Close False: GoTo NextFile

End If

' 5d) Consolidation (data + 3 plots)

ProcessConsolidation cdssS, outS, cStart + 1, cEnd, origHeight

' 5e) Cyclic (data + all plots + loops + summary)

ProcessCyclicStage cycS, outS

cdssWb.Close False

NextFile:

Next vItem

' 6) Clean up

cycWb.Close False

MsgBox "Processing complete! Results in " & outWb.Name, vbInformation

End Sub

'————————————————————————————————————————————————————————————

' FindRow: looks in Col A for searchString

'————————————————————————————————————————————————————————————

Function FindRow(ws As Worksheet, searchString As String) As Long

Dim c As Range

Set c = ws.UsedRange.Find(What:=searchString, LookAt:=xlPart, MatchCase:=False)

If Not c Is Nothing Then FindRow = c.Row Else FindRow = 0

End Function

'————————————————————————————————————————————————————————————

' ProcessConsolidation: data + FL + 3 plots ? dst

'————————————————————————————————————————————————————————————

Sub ProcessConsolidation( \_

src As Worksheet, dst As Worksheet, \_

firstRow As Long, lastRow As Long, \_

origH As Double \_

)

Dim n As Long, i As Long

Dim tMin As Double, dispC As Double, FL As Double

Dim ch As ChartObject

Const lft = 20, wdth = 320, hght = 240

n = lastRow - firstRow + 1

If n < 1 Then Exit Sub

' Compute FL

dispC = Val(src.Cells(lastRow, "C").Value)

FL = origH - dispC

If FL <= 0 Then Exit Sub

' Write FL & headers

With dst

.Range("F1").Value = "Final Length (mm)"

.Range("G1").Value = FL

.Range("A1:E1").Value = Array( \_

"Time (min)", "Axial Stress (kPa)", \_

"Axial Strain (%)", "Shear Strain (%)", "Vertical Displacement (mm)" \_

)

For i = 0 To n - 1

tMin = Val(src.Cells(firstRow + i, "A").Value) / 60

dispC = Val(src.Cells(firstRow + i, "C").Value)

.Cells(i + 2, "A").Value = tMin

.Cells(i + 2, "B").Value = Val(src.Cells(firstRow + i, "D").Value)

.Cells(i + 2, "C").Value = Val(src.Cells(firstRow + i, "G").Value)

.Cells(i + 2, "D").Value = Val(src.Cells(firstRow + i, "I").Value)

.Cells(i + 2, "E").Value = dispC

Next i

End With

' 1) Axial Stress vs Time

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=20, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Axial Stress vs Time"

.XValues = dst.Range("A2:A" & n + 1)

.Values = dst.Range("B2:B" & n + 1)

End With

FormatDSSChart .Parent.Chart, "Time (min)", "Axial Stress (kPa)", "Axial Stress"

End With

' 2) Axial Strain vs Time

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=hght + 40, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Axial Strain vs Time"

.XValues = dst.Range("A2:A" & n + 1)

.Values = dst.Range("C2:C" & n + 1)

End With

FormatDSSChart .Parent.Chart, "Time (min)", "Axial Strain (%)", "Axial Strain"

End With

' 3) Shear Strain vs Time

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=(hght + 40) \* 2, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Shear Strain vs Time"

.XValues = dst.Range("A2:A" & n + 1)

.Values = dst.Range("D2:D" & n + 1)

End With

FormatDSSChart .Parent.Chart, "Time (min)", "Shear Strain (%)", "Shear Strain"

End With

End Sub

'————————————————————————————————————————————————————————————

' ProcessCyclicStage: data + all cyclic plots + loops + summary ? dst

'————————————————————————————————————————————————————————————

Sub ProcessCyclicStage(src As Worksheet, dst As Worksheet)

Const lft = 360, wdth = 320, hght = 240

Dim lr As Long, i As Long

Dim rawT As Double, cumT As Double, baseT As Double

Dim prevC As Long, curC As Long, tmpC As Long

Dim FL As Double

Dim LDv, LFv, AFv As Double

Dim gammaPct As Double, tauVal As Double, sigV As Double

Dim devStress As Double

Dim r0 As Long: r0 = 20

Dim lastRowC As Long

Dim ch As ChartObject

' Read FL (from consolidation block)

FL = Val(dst.Range("G1").Value)

If FL <= 0 Then Exit Sub

' Last row in default.cyc

lr = src.Cells(src.Rows.Count, "B").End(xlUp).Row

If lr < 2 Then Exit Sub

' Table header

With dst

.Cells(r0, 1).Resize(1, 9).Value = Array( \_

"Cycle", "Cum Time (s)", "Shear Strain (%)", \_

"Shear Stress (kPa)", "Vertical Stress (kPa)", \_

"Deviator Stress (kPa)", "Lateral Displacement (mm)", \_

"Lateral Force (N)", "Axial Force (N)" \_

)

End With

' Initialize

prevC = Val(src.Cells(2, "A").Value): baseT = 0: cumT = 0

' Loop & compute

For i = 2 To lr

rawT = Val(src.Cells(i, "B").Value)

If Len(Trim(src.Cells(i, "A").Value)) > 0 Then

tmpC = Val(src.Cells(i, "A").Value)

curC = IIf(tmpC = prevC, prevC + 1, tmpC)

Else

curC = prevC

End If

If curC <> prevC Then baseT = cumT

cumT = baseT + rawT: prevC = curC

LDv = Val(src.Cells(i, "F").Value)

LFv = Val(src.Cells(i, "G").Value)

AFv = Val(src.Cells(i, "D").Value)

gammaPct = 100 \* LDv / FL

devStress = 4 \* LFv \* 1000000# / (WorksheetFunction.Pi() \* 70 ^ 2)

tauVal = 0.5 \* devStress

sigV = 4 \* AFv \* 1000000# / (WorksheetFunction.Pi() \* 70 ^ 2)

With dst

.Cells(r0 + i - 1, 1).Value = curC

.Cells(r0 + i - 1, 2).Value = cumT

.Cells(r0 + i - 1, 3).Value = gammaPct

.Cells(r0 + i - 1, 4).Value = tauVal

.Cells(r0 + i - 1, 5).Value = sigV

.Cells(r0 + i - 1, 6).Value = devStress

.Cells(r0 + i - 1, 7).Value = LDv

.Cells(r0 + i - 1, 8).Value = LFv

.Cells(r0 + i - 1, 9).Value = AFv

End With

Next i

lastRowC = r0 + lr - 1

' --- CYCLIC PLOTS A–M ---

' A) Lateral Displacement vs Time

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=20, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Lateral Displacement vs Time"

.XValues = dst.Range(dst.Cells(r0 + 1, 2), dst.Cells(lastRowC, 2))

.Values = dst.Range(dst.Cells(r0 + 1, 7), dst.Cells(lastRowC, 7))

End With

FormatDSSChart .Parent.Chart, "Cum Time (s)", "Lateral Displacement (mm)", "Lateral Displacement"

End With

' B) Lateral Force vs Time

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=hght + 40, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Lateral Force vs Time"

.XValues = dst.Range(dst.Cells(r0 + 1, 2), dst.Cells(lastRowC, 2))

.Values = dst.Range(dst.Cells(r0 + 1, 8), dst.Cells(lastRowC, 8))

End With

FormatDSSChart .Parent.Chart, "Cum Time (s)", "Lateral Force (N)", "Lateral Force"

End With

' C) Axial Force vs Time

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=(hght + 40) \* 2, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Axial Force vs Time"

.XValues = dst.Range(dst.Cells(r0 + 1, 2), dst.Cells(lastRowC, 2))

.Values = dst.Range(dst.Cells(r0 + 1, 9), dst.Cells(lastRowC, 9))

End With

FormatDSSChart .Parent.Chart, "Cum Time (s)", "Axial Force (N)", "Axial Force"

End With

' D) Lateral Displacement vs Cycle

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=(hght + 40) \* 3, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Lateral Displacement vs Cycle"

.XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.Values = dst.Range(dst.Cells(r0 + 1, 7), dst.Cells(lastRowC, 7))

End With

FormatDSSChart .Parent.Chart, "Cycle", "Lateral Displacement (mm)", "Lateral Displacement"

End With

' E) Lateral Force vs Cycle

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=(hght + 40) \* 4, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Lateral Force vs Cycle"

.XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.Values = dst.Range(dst.Cells(r0 + 1, 8), dst.Cells(lastRowC, 8))

End With

FormatDSSChart .Parent.Chart, "Cycle", "Lateral Force (N)", "Lateral Force"

End With

' F) Axial Force vs Cycle

Set ch = dst.ChartObjects.Add(Left:=lft, Top:=(hght + 40) \* 5, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Axial Force vs Cycle"

.XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.Values = dst.Range(dst.Cells(r0 + 1, 9), dst.Cells(lastRowC, 9))

End With

FormatDSSChart .Parent.Chart, "Cycle", "Axial Force (N)", "Axial Force"

End With

' G) Shear Stress vs Time

Set ch = dst.ChartObjects.Add(Left:=lft + wdth + 40, Top:=20, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Shear Stress vs Time"

.XValues = dst.Range(dst.Cells(r0 + 1, 2), dst.Cells(lastRowC, 2))

.Values = dst.Range(dst.Cells(r0 + 1, 4), dst.Cells(lastRowC, 4))

End With

FormatDSSChart .Parent.Chart, "Cum Time (s)", "Shear Stress (kPa)", "Shear Stress"

End With

' H) Shear Stress vs Shear Strain

Set ch = dst.ChartObjects.Add(Left:=lft + wdth + 40, Top:=hght + 40, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Shear Stress vs Shear Strain"

.XValues = dst.Range(dst.Cells(r0 + 1, 3), dst.Cells(lastRowC, 3))

.Values = dst.Range(dst.Cells(r0 + 1, 4), dst.Cells(lastRowC, 4))

End With

FormatDSSChart .Parent.Chart, "Shear Strain (%)", "Shear Stress (kPa)", "Shear Stress"

End With

' I) Vertical Stress vs Shear Strain

Set ch = dst.ChartObjects.Add(Left:=lft + wdth + 40, Top:=(hght + 40) \* 2, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Vertical Stress vs Shear Strain"

.XValues = dst.Range(dst.Cells(r0 + 1, 3), dst.Cells(lastRowC, 3))

.Values = dst.Range(dst.Cells(r0 + 1, 5), dst.Cells(lastRowC, 5))

End With

FormatDSSChart .Parent.Chart, "Shear Strain (%)", "Vertical Stress (kPa)", "Vertical Stress"

End With

' J) Horizontal Stress vs Shear Strain

Set ch = dst.ChartObjects.Add(Left:=lft + wdth + 40, Top:=(hght + 40) \* 3, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Horizontal Stress vs Shear Strain"

.XValues = dst.Range(dst.Cells(r0 + 1, 3), dst.Cells(lastRowC, 3))

.Values = dst.Range(dst.Cells(r0 + 1, 6), dst.Cells(lastRowC, 6))

End With

FormatDSSChart .Parent.Chart, "Shear Strain (%)", "Horizontal Stress (kPa)", "Horizontal Stress"

End With

' K) Shear Stress vs Cycle

Set ch = dst.ChartObjects.Add(Left:=lft + wdth + 40, Top:=(hght + 40) \* 4, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

With .SeriesCollection(1)

.Name = "Shear Stress vs Cycle"

.XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.Values = dst.Range(dst.Cells(r0 + 1, 4), dst.Cells(lastRowC, 4))

End With

FormatDSSChart .Parent.Chart, "Cycle", "Shear Stress (kPa)", "Shear Stress"

End With

' L) Effective Stresses vs Cycle

Set ch = dst.ChartObjects.Add(Left:=lft + wdth + 40, Top:=(hght + 40) \* 5, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

.SeriesCollection(1).Name = "Vertical Stress"

.SeriesCollection(1).XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.SeriesCollection(1).Values = dst.Range(dst.Cells(r0 + 1, 5), dst.Cells(lastRowC, 5))

.SeriesCollection.NewSeries

.SeriesCollection(2).Name = "Horizontal Stress"

.SeriesCollection(2).XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.SeriesCollection(2).Values = dst.Range(dst.Cells(r0 + 1, 6), dst.Cells(lastRowC, 6))

FormatDSSChart .Parent.Chart, "Cycle", "Stress (kPa)", "Effective Stresses"

End With

' M) Shear Strain vs Cycle

Set ch = dst.ChartObjects.Add(Left:=lft + 2 \* (wdth + 40), Top:=20, Width:=wdth, Height:=hght)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

.SeriesCollection(1).Name = "Shear Strain vs Cycle"

.SeriesCollection(1).XValues = dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRowC, 1))

.SeriesCollection(1).Values = dst.Range(dst.Cells(r0 + 1, 3), dst.Cells(lastRowC, 3))

FormatDSSChart .Parent.Chart, "Cycle", "Shear Strain (%)", "Shear Strain"

End With

' — CYCLE LOOP PLOTS & SUMMARY —

GenerateLoopChartsAndSummary dst, lastRowC, r0

End Sub

'————————————————————————————————————————————————————————————

' GenerateLoopChartsAndSummary: loops & ±5/±10/±15% summary

'————————————————————————————————————————————————————————————

Sub GenerateLoopChartsAndSummary(dst As Worksheet, lastRow As Long, r0 As Long)

Const lftLP = 20 + 2 \* (320 + 40), wdthLP = 320, hghtLP = 240

Dim cycles As Variant: cycles = Array(5, 10, 15, 20, 100, 1000)

Dim maxC As Long, cVal As Long

Dim cellR As Range, idx As Long

Dim startR As Long, endR As Long, tR As Long

Dim ch As ChartObject, sumS As Worksheet

' find max cycle present

For Each cellR In dst.Range(dst.Cells(r0 + 1, 1), dst.Cells(lastRow, 1))

If cellR.Value > maxC Then maxC = cellR.Value

Next

' create summary sheet

Set sumS = dst.Parent.Sheets.Add(after:=dst)

On Error Resume Next: sumS.Name = dst.Name & "\_Summary": On Error GoTo 0

' header for max/min

With sumS

.Range("A1:E1").Value = Array("Cycle", "Max Stress", "Min Stress", "Max Strain", "Min Strain")

End With

' loop cycles

For idx = LBound(cycles) To UBound(cycles)

cVal = cycles(idx)

If cVal > maxC Then Exit For

With dst

' find start row

On Error Resume Next

startR = .Columns(1).Find(What:=cVal, LookIn:=xlValues, LookAt:=xlWhole).Row

On Error GoTo 0

If startR = 0 Then GoTo SkipLoop

' find end row

endR = startR

For tR = startR + 1 To lastRow

If .Cells(tR, 1).Value = cVal Then

endR = tR

ElseIf .Cells(tR, 1).Value > cVal Then

Exit For

End If

Next tR

' loop chart

Set ch = dst.ChartObjects.Add( \_

Left:=lftLP, Top:=20 + (idx Mod 2) \* (hghtLP + 40), \_

Width:=wdthLP, Height:=hghtLP)

With ch.Chart

.ChartType = xlXYScatterSmoothNoMarkers

.SeriesCollection.NewSeries

.SeriesCollection(1).Name = "Loop " & cVal

.SeriesCollection(1).XValues = dst.Range(dst.Cells(startR, 3), dst.Cells(endR, 3))

.SeriesCollection(1).Values = dst.Range(dst.Cells(startR, 4), dst.Cells(endR, 4))

FormatDSSChart .Parent.Chart, "Shear Strain (%)", "Shear Stress (kPa)", "Loop"

End With

' summary max/min

Dim mxS As Double: mxS = -1E+99

Dim mnS As Double: mnS = 1E+99

Dim mxG As Double: mxG = -1E+99

Dim mnG As Double: mnG = 1E+99

For tR = startR To endR

mxS = Application.max(mxS, .Cells(tR, 4).Value)

mnS = Application.min(mnS, .Cells(tR, 4).Value)

mxG = Application.max(mxG, .Cells(tR, 3).Value)

mnG = Application.min(mnG, .Cells(tR, 3).Value)

Next

With sumS

.Cells(idx + 2, 1).Value = cVal

.Cells(idx + 2, 2).Value = mxS

.Cells(idx + 2, 3).Value = mnS

.Cells(idx + 2, 4).Value = mxG

.Cells(idx + 2, 5).Value = mnG

End With

End With

SkipLoop:

Next

' header for ± targets

sumS.Range("G1:I1").Value = Array("Target Strain (%)", "Cycle No", "Shear Stress (kPa)")

' ±5, ±10, ±15

Dim targets As Variant: targets = Array(5, -5, 10, -10, 15, -15)

Dim ti As Long, tgt As Double, foundR As Long

For ti = LBound(targets) To UBound(targets)

tgt = targets(ti)

sumS.Cells(ti + 2, 7).Value = tgt

foundR = 0

For tR = r0 + 1 To lastRow

If Abs(dst.Cells(tR, 3).Value - tgt) <= 0.5 Then

foundR = tR: Exit For

End If

Next

If foundR > 0 Then

sumS.Cells(ti + 2, 8).Value = dst.Cells(foundR, 1).Value

sumS.Cells(ti + 2, 9).Value = dst.Cells(foundR, 4).Value

Else

sumS.Cells(ti + 2, 8).Value = "NaN"

sumS.Cells(ti + 2, 9).Value = "NaN"

End If

Next ti

End Sub

'————————————————————————————————————————————————————————————

' Chart-styling routine

'————————————————————————————————————————————————————————————

Sub FormatDSSChart(cht As Chart, xLabel As String, yLabel As String, sName As String)

Dim iSer As Long

cht.HasTitle = False

On Error Resume Next: cht.chartTitle.Delete: On Error GoTo 0

cht.ChartType = xlXYScatterSmoothNoMarkers

For iSer = 1 To cht.SeriesCollection.Count

With cht.SeriesCollection(iSer).Format.Line

.ForeColor.RGB = RGB(0, 0, 0)

.Weight = 2

.DashStyle = msoLineSolid

End With

Next

With cht.Axes(xlCategory)

.HasTitle = True

.AxisTitle.Caption = xLabel

.Format.Line.ForeColor.RGB = RGB(0, 0, 0)

.Format.Line.Weight = 1.5

.Format.Line.DashStyle = msoLineSolid

.MajorTickMark = xlTickMarkCross

.MinorTickMark = xlTickMarkInside

End With

With cht.Axes(xlValue)

.HasTitle = True

.AxisTitle.Caption = yLabel

.Format.Line.ForeColor.RGB = RGB(0, 0, 0)

.Format.Line.Weight = 1.5

.Format.Line.DashStyle = msoLineSolid

.MajorTickMark = xlTickMarkCross

.MinorTickMark = xlTickMarkInside

End With

End Sub

'————————————————————————————————————————————————————————————

' Utilities

'————————————————————————————————————————————————————————————

Function SafeSheetName(NameStr As String) As String

Dim tmp As String: tmp = NameStr

tmp = Replace(tmp, "/", "\_"): tmp = Replace(tmp, "\", "\_")

tmp = Replace(tmp, ":", "\_"): tmp = Replace(tmp, "\*", "\_")

tmp = Replace(tmp, "?", "\_"): tmp = Replace(tmp, "[", "\_")

tmp = Replace(tmp, "]", "\_"): tmp = Replace(tmp, Chr(34), "\_")

If Len(tmp) > 31 Then tmp = Left(tmp, 31)

SafeSheetName = tmp

End Function

Function GetBaseName(fullPath As String) As String

Dim fName As String

fName = Mid(fullPath, InStrRev(fullPath, "\") + 1)

If InStr(fName, ".") > 0 Then fName = Left(fName, InStrRev(fName, ".") - 1)

GetBaseName = fName

End Function