

Appendix D: 'COMBINE' PROGRAM

This program is a part of the RSIM software and serves to combine the damage metric data from files PZT 1 through 5 and posts a unified chart. It resides in the 'COMBINE' sheet in the file 'PZT-ALL' and is written in Visual Basic for Applications (VBA).

```
'  
' COMBINE Macro  
' Combines the DAMAGE METRIC data from PZT 1 through 5 and posts a unified chart.  
'  
Sub COMBINE()  
    Windows("PZT - All.xls").Activate  
    Sheets("SET-ALL").Select  
    Mnumber = Worksheets("SET-ALL").Cells(1, "B")  
    'The program is executed only when the Measurement Number is between 2 and 251.  
    If Mnumber < 2 Or Mnumber > 251 Then  
        Sheets("SET-ALL").Select  
        Range("B1").Select  
        Msg = "Measurement Number has to be between 2 and 251"  
        DialogStyle = vbOKOnly + vbExclamation + vbDefaultButton1  
        Title = "ERROR"  
        MsgBox Msg, DialogStyle, Title  
    End  
End If  
'Old data from the workbook is cleared  
    Sheets("ALL-CORR").Select  
    Selection.Delete  
    Sheets("ALL-ASD").Select  
    Selection.Delete  
    Sheets("Data-Copy").Select  
    Range("B2:IV6").Select  
    Selection.ClearContents  
    Range("B9:IV13").Select  
    Selection.ClearContents  
    Range("B2").Select  
    'The windows PZT 1 through 5 are activated in turn. The Damage metric values are  
    copied  
    'from these files depending on the Measurement number specified.  
    'These values are then pasted onto the "Data-Copy" sheet in the "PZT-ALL" workbook.  
    Windows("PZT - 1.xls").Activate  
    Sheets("Data(A)").Select
```

```

Range(Cells(2, 7), Cells(2, Mnumber + 5)).Select
Selection.Copy
Windows("PZT - ALL.xls").Activate
Sheets("Data-Copy").Select
Range("B2").Select
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B9").Select
Windows("PZT - 1.xls").Activate
Range(Cells(3, 7), Cells(3, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
ActiveWindow.SmallScroll ToRight:=-3
Range("E1").Select
Sheets("Settings").Select
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B3").Select

```

```

Windows("PZT - 2.xls").Activate
Sheets("Data(A)").Select
Range(Cells(2, 7), Cells(2, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B10").Select
Windows("PZT - 2.xls").Activate
Range(Cells(3, 7), Cells(3, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
ActiveWindow.SmallScroll ToRight:=-4
Range("E1").Select
Sheets("Settings").Select
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B4").Select

```

```

Windows("PZT - 3.xls").Activate
Sheets("Data(A)").Select
Range(Cells(2, 7), Cells(2, Mnumber + 5)).Select

```

```
Application.CutCopyMode = False
Selection.Copy
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B11").Select
Windows("PZT - 3.xls").Activate
Range(Cells(3, 7), Cells(3, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
ActiveWindow.SmallScroll ToRight:=-4
Range("E1").Select
Sheets("Settings").Select
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B5").Select
```

```
Windows("PZT - 4.xls").Activate
Sheets("Data(A)").Select
Range(Cells(2, 7), Cells(2, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B12").Select
Windows("PZT - 4.xls").Activate
Range(Cells(3, 7), Cells(3, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
ActiveWindow.SmallScroll ToRight:=-4
Range("E1").Select
Sheets("Settings").Select
Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B6").Select
```

```
Windows("PZT - 5.xls").Activate
Sheets("Data(A)").Select
Range(Cells(2, 7), Cells(2, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
```

```

Windows("PZT - ALL.xls").Activate
Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range("B13").Select
Windows("PZT - 5.xls").Activate
Range(Cells(3, 7), Cells(3, Mnumber + 5)).Select
Application.CutCopyMode = False
Selection.Copy
ActiveWindow.SmallScroll ToRight:=-4
Range("E1").Select
Sheets("Settings").Select
Windows("PZT - ALL.xls").Activate

```

'Based on the pasted values on the "Data-Copy" sheet, damage metric charts
'are constructed for ALL FIVE PZT's.

```

Selection.PasteSpecial Paste:=xlValues, Operation:=xlNone, _
    SkipBlanks:=False, Transpose:=False
Range(Cells(1, 1), Cells(6, Mnumber)).Select
Application.CutCopyMode = False
ActiveSheet.ChartObjects.Add(18.75, 19.5, 471, 258.75).Select
Application.CutCopyMode = False
ActiveChart.ChartWizard Source:=Range(Cells(1, 1), Cells(6, Mnumber)),
Gallery:=xlColumn, _
    Format:=2, PlotBy:=xlColumns, CategoryLabels:=1, SeriesLabels _
    :=1, HasLegend:=1, Title:="Damage Metric for ALL PZT's (Average Square
Difference)", _
    CategoryTitle:="", ValueTitle:="Metric", ExtraTitle:=""
Selection.Cut
Sheets("ALL-ASD").Select
Range("A1").Select
ActiveSheet.Paste
Sheets("Data-Copy").Select
Range(Cells(8, 1), Cells(13, Mnumber)).Select
ActiveSheet.ChartObjects.Add(25.5, 18.75, 463.5, 264.75).Select
Application.CutCopyMode = False
ActiveChart.ChartWizard Source:=Range(Cells(8, 1), Cells(13, Mnumber)),
Gallery:=xlColumn, _
    Format:=2, PlotBy:=xlColumns, CategoryLabels:=1, SeriesLabels _
    :=1, HasLegend:=1, Title:= _
    "Damage Metric for ALL PZT's (1 - Correlation)", CategoryTitle:="" _
    , ValueTitle:="Metric", ExtraTitle:=""
Selection.Cut
Sheets("ALL-CORR").Select
Range("A1").Select

```

```
    ActiveSheet.Paste
  ,
  'The following block puts out a window to determine if the user wants to save the
  worksheet.
    Msg = "Do you want to SAVE the active workbook?"
    DialogStyle = vbYesNoCancel + vbQuestion + vbDefaultButton1
    Title = "SAVE?"
    Response = MsgBox(Msg, DialogStyle, Title)
    If Response = vbYes Then
      ActiveWorkbook.save
    Else
      End
    End If
  ,
  '
End Sub
```