File created: *31-Jan-89 16:05:53* **{QV}<IDE>1.41>NCPLOTCARD.;33**

changes to: *(ADVICE PLOT.WHENSELECTEDFN)*
(FNS PC.SetUpMiddleButtonMenu PCP.ResetPlotMenuItems)
(VARS NCPLOTCARDCOMS PC.PlotCardIcon)

previous date: *31-Jan-89 15:17:21 {QV}<IDE>1.41>NCPLOTCARD.;31*

Read Table: *INTERLISP*

Package: *INTERLISP*

Format: *MCCS*

```
;;
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(RPAQQ NCPLOTCARDCOMS
       [;; dsj. 11/10/88.  Creates new card type, the Plot Card, based on J.Pedersen's Plot package.
        (FILES PLOT PLOTANDNC-PATCH)
        ;; Data entry fns
        (FNS PC.AddCurve PC.AddLine PC.AddPowerCurve PC.ConvertPointsToTextStream PC.EditPlotLine PC.EditPlotObject
             PC.EditPlotPoints PC.EditPlotPowerCurve PC.GetPointObjects PC.GetPointsFromTeditWindow PC.PlotObjectLine?
             PC.PlotObjectPowerCurve? PC.PlotPowerCurve PC.PointsTeditMenuCommands PC.PointsTeditQuitAndSaveFn
             PC.PointsTeditQuitFn PC.PointsTeditReadTable PC.PointsTeditRightButtonQuitFn PC.PointsTeditUpdateFn
             PC.PointsTeditWindowProps PC.PowerFn)
        ;; NC card type fns
        (FNS PC.AddPlotCardType PC.CopyCardFn PC.CreatePlot PC.DirtyPCardFn PC.EditCardFn PC.GetCardFn PC.MakeCardFn
             PC.PutCardFn PC.QuitCardFn)
        ;;
        (FNS MARKPLOTDIRTY PLOTDIRTYP MARKPLOTDIRTYFROMMENU)
        ;; Interface fns
        (FNS PC.MiddleButtonMenuSelectedFn PC.SetUpMiddleButtonMenu PC.AddPlotMenuItems PC.MiddlePlotMenuItems
             PC.GetMiddleButtonTitleBarMenuItems)
        (ADVISE PLOT.WHENSELECTEDFN)
        (BITMAPS PC.PlotCardIcon)
        (GLOBALVARS PC.PointsTeditMenuCommands PC.PointsTeditReadTable)
        (INITVARS (PC.PointTextDelimiter "/"))
        (VARS (PC.VersionNumber 1)
              (PC.PowerCurveVersion 1))
        ;; PCP fns and vars
        (FNS PCP.ResetPlotMenuItems)
        (INITVARS (PCP.BottomLabel ">> X label <<")
                  (PCP.LeftLabel "Y label")
                  (PCP.TopLabel ">> Plot name <<")
                  (PCP.RightLabel))
        (INITVARS (PCP.BottomTics T)
                  (PCP.LeftTics T)
                  (PCP.TopTics)
                  (PCP.RightTics))
        (GLOBALVARS PC.MiddleButtonTitleBarMenuItems)
        [VARS [PCP.EditPlotObjectFns '((PC.PlotObjectPowerCurve? PC.EditPlotPowerCurve)
                                       (PC.PlotObjectLine? PC.EditPlotLine]
              (PCP.MiddleButtonTitleBarMenuItems '(("Edit Points" PC.EditPlotPoints "Allows you to add or delete points to this plot")
                                                   ("Add Line" PC.AddLine "Allows you to add a straight line to this plot")
                                                   ("Add Curve" PC.AddCurve "Allows you to add a power curve to this plot"
                                                          (SUBITEMS ("Add Power Curve" PC.AddPowerCurve "Allows you to add a
                                                                                                        power curve to this plot"]
        ;; This should be an NCP fn
        (FNS NCP.ReshapeWindow)
        ;; PLOT fns patch
        (FNS DRAWGRAPHOBJECT.NEW)
        ;; Computational fns
        (FNS POWERFN)
        (INITVARS (PC.COEFF)
                  (PC.POWER)
                  (PC.ASYMPTOTE))
        [P (MOVD 'DRAWGRAPHOBJECT.NEW 'DRAWGRAPHOBJECT T)
           (PC.AddPlotCardType)
           (AND (MEMBER 'NCCARDMGMT FILELST)
                (CM.AddCardMgmtToCardType 'Plot]
        (DECLARE%: DONTCOPY (PROPS (NCPLOTCARD MAKEFILE-ENVIRONMENT)
                                   (NCPLOTCARD FILETYPE])

;; dsj. 11/10/88.  Creates new card type, the Plot Card, based on J.Pedersen's Plot package.
```

(FILESLOAD PLOT PLOTANDNC-PATCH)

;; Data entry fns

(DEFINEQ

```
(PC.AddCurve
  [LAMBDA (Plot)                                        ; Edited 15-Nov-88 20:23 by DSJ

    ;; dsj 11/15/88.  Add a curve to the plot.          ; Currently only power curves availiable
    (PC.AddPowerCurve Plot])


(PC.AddLine
  [LAMBDA (Plot Slope Intercept ResetFlg)               ; Edited 15-Nov-88 20:26 by DSJ

    ;; dsj. 11/14/88.  Allow user to add a line to the plot.

    (if (AND (NULL ResetFlg)
             Intercept)
        then (PLOTLINE Plot Slope Intercept)
      else (GETMOUSESTATE)
           (PROG ((PlotWindow (GETPLOTWINDOW Plot))
                  Pos)
                 (SETQ Pos (CONS (fetch RIGHT of (WINDOWREGION PlotWindow))
                                 LASTMOUSEY))
                 (RETURN (if (SETQ Slope (RNUMBER (if Slope
                                                      then (CONCAT "Current slope & intercept is:  " Slope " , "
                                                                   Intercept "
                                                                   Give the new slope of the line:")
                                                    else "Give the slope of the line:")
                                                  Pos NIL NIL T T NIL T))
                             then (if (SETQ Intercept (RNUMBER (if Intercept
                                                                   then (CONCAT "Current slope & intercept is:  "
                                                                                Slope " , " Intercept "
                                                                                Give the new intercept of the line:")
                                                                 else (CONCAT "Slope is:  " Slope "
                                                                              Give the intercept of the line:"))
                                                               Pos NIL NIL T T NIL T))
                                      then (PLOTLINE Plot Slope Intercept])


(PC.AddPowerCurve
  [LAMBDA (Plot Asymptote Coeff Power ResetFlg)         ; Edited 16-Nov-88 00:06 by DSJ

    ;; dsj 11/15/88.  Add a power curve to the plot.  Ask user for parameters.

    (if (AND (NULL ResetFlg)
             Asymptote)
        then (PC.PlotPowerCurve Plot Asymptote Coeff Power)
      else (GETMOUSESTATE)
           (PROG (Pos (PlotWindow (GETPLOTWINDOW Plot)))
                 (SETQ Pos (CONS (fetch RIGHT of (WINDOWREGION PlotWindow))
                                 LASTMOUSEY))
                 (RETURN (if (SETQ Asymptote (RNUMBER (if Asymptote
                                                          then (CONCAT "Asymptote is:  " Asymptote "
                                                                       Coeff is:  " Coeff "
                                                                       Power is:  " Power "
                                                                       Give the new asymptote of the power
                                                                       curve:")
                                                        else "Give the asymptote of the power curve:")
                                                      Pos NIL NIL T T NIL T))
                             then (if (SETQ Coeff (RNUMBER (if Coeff
                                                               then (CONCAT "Asymptote is:  " Asymptote "
                                                                            Coeff is:  " Coeff "
                                                                            Power is:  " Power "
                                                                            Give the new coeff of the power
                                                                            curve:")
                                                             else (CONCAT "Asymptote is:  " Asymptote "
                                                                          Give the coeff of the power curve:

                                                                          "))
```

```
                                                    Pos NIL NIL T T NIL T))
                                            then (if (SETQ Power (RNUMBER (if Power
                                                                              then (CONCAT "Asymptote is:  " Asymptote
                                                                                           "
                                                                                           Coeff is:  " Coeff "
                                                                                           Power is:  " Power "
                                                                                           Give the new power of the
                                                                                           power curve:")
                                                                            else (CONCAT "Asymptote is:  " Asymptote "
                                                                                         Coeff is:  " Coeff "
                                                                                         Give the power of the power
                                                                                         curve:

                                                                                         "))
                                                                    Pos NIL NIL T T NIL T))
                                                  then (PC.PlotPowerCurve Plot Asymptote Coeff Power])


(PC.ConvertPointsToTextStream
 [LAMBDA (PointPlotObjects)                                    ; Edited 14-Nov-88 19:48 by DSJ

   ;; dsj/11/14/88.  Convert point positions in plot objects to text in a stream.

   (GLOBALVARS PC.PointTextDelimiter)
   (PROG ((Points ""))
         (for obj in PointPlotObjects bind point do [SETQ point (fetch (POINTDATA POINTPOSITION)
                                                                    of (PLOTOBJECTPROP obj 'OBJECTDATA]
                                                    (SETQ Points (CONCAT Points (CAR point)
                                                                         " "
                                                                         (CDR point)
                                                                         " " PC.PointTextDelimiter " ")))
         (RETURN (OPENTEXTSTREAM Points])


(PC.EditPlotLine
 [LAMBDA (LineObject Plot)                                     ; Edited 15-Nov-88 01:24 by DSJ

   ;; dsj. 11/15/88.  Edit parameters of the line.

   (PROG [(LineData (PLOTOBJECTPROP LineObject 'OBJECTDATA]
                                                               ; First get new line
         (if (PC.AddLine Plot (fetch (LINEDATA SLOPE) of LineData)
                              (fetch (LINEDATA CONSTANT) of LineData)
                              T)
             then                                              ;  And delete the old one.
                  (DELETEPLOTOBJECT LineObject Plot NIL T])


(PC.EditPlotObject
 [LAMBDA (PlotObject Plot)                                     ; Edited 27-Jan-89 17:23 by DSJ

   ;; dsj/ 11/14/88.  Edit the selected plot object

   ;; dsj 1/27/89 Now reads fns off of PCP.EditPlotObjectFns globalvar.

   (if (for FnPair in PCP.EditPlotObjectFns thereis               ; if its an object of that type, edit it
                                                    (if (APPLY* (CAR FnPair)
                                                                PlotObject Plot)
                                                        then (APPLY* (CADR FnPair)
                                                                     PlotObject Plot)
                                                             T))
       else (PLOTPROMPT "Can't edit that plot object here." Plot])


(PC.EditPlotPoints
 [LAMBDA (Plot)                                                ; Edited 15-Nov-88 00:23 by DSJ

   ;; dsj. 11/14/88.  Give user a TEdit interface for adding/deleting points to the plot.

   (PROG (PointsWindow PointsStream (PointsWindowHeight 75)
                (PlotWindow (GETPLOTWINDOW Plot))
                (PointObjs (PC.GetPointObjects Plot)))         ; Don't open a new window if one for this guy is already opened.
         (if (AND (SETQ PointsWindow (WINDOWPROP PlotWindow 'POINTSWINDOW))
```

```
                (OPENWP PointsWindow))
            then (FLASHW PointsWindow)
                 (RETURN)
        else                                                ; Set up points window
             (if PointsWindow
                 then                                       ; Move it to right place
                      (MOVEW PointsWindow (fetch LEFT of (WINDOWREGION PlotWindow))
                             (fetch TOP of (WINDOWREGION PlotWindow)))
                 else (SETQ PointsWindow (CREATEW (CREATEREGION (fetch LEFT of (WINDOWREGION PlotWindow))
                                                                (fetch TOP of (WINDOWREGION PlotWindow))
                                                                (fetch WIDTH of (WINDOWREGION PlotWindow))
                                                                PointsWindowHeight)
                                                  "Plot Points Editor" NIL T))
                                                            ; Put it on plotwindow's prop
                      (WINDOWPROP PlotWindow 'POINTSWINDOW PointsWindow))
                                                            ; Set up points textstream
             (SETQ PointsStream (PC.ConvertPointsToTextStream PointObjs))
                                                            ; Create TEdit window
             (WINDOWPROP PointsWindow 'TEDIT.MENU.COMMANDS (PC.PointsTeditMenuCommands))
             (TEDIT PointsStream PointsWindow NIL (PC.PointsTeditWindowProps))
                                                            ; Put needed info on prop lists
             (WINDOWPROP PointsWindow 'PLOT Plot)
             (STREAMPROP PointsStream 'WINDOW PointsWindow)
                                                            ; Make this an attached window
             (ATTACHWINDOW PointsWindow PlotWindow 'TOP 'JUSTIFY 'LOCALCLOSE)
             (WINDOWADDPROP PointsWindow 'CLOSEFN (FUNCTION FREEATTACHEDWINDOW)
                    T])


(PC.EditPlotPowerCurve
  [LAMBDA (GraphObject Plot)                                ; Edited 16-Nov-88 00:10 by DSJ

    ;; dsj. 11/15/88.  Edit parameters of the power curve.

    (PROG [(PowerData (PLOTOBJECTPROP GraphObject 'OBJECTUSERDATA]
          (RETURN (AND PowerData (PC.AddPowerCurve Plot (LISTGET PowerData 'Asymptote)
                                                        (LISTGET PowerData 'Coeff)
                                                        (LISTGET PowerData 'Power)
                                                        T)                  ; then delete old one
                       (DELETEPLOTOBJECT GraphObject Plot NIL T])


(PC.GetPointObjects
  [LAMBDA (Plot)                                            ; Edited 14-Nov-88 18:11 by DSJ

    ;; dsj. 11/14/88.  Return plot's point objects, if any.

    (for obj in (PLOTPROP Plot 'PLOTOBJECTS) collect obj when (PLOTOBJECTSUBTYPE? POINT obj])


(PC.GetPointsFromTeditWindow
  [LAMBDA (WindowOrStream)                                  ; Edited 15-Nov-88 20:11 by DSJ

    ;; dsj. 11/14/88.  Read points from tedit window.  Delimiters are: <CR> plus the value of PC.PointTextDelimiter

    (PROG [Points Pair X Y CH (PRT (PC.PointsTeditReadTable))
                (Stream (OR (STREAMP WindowOrStream)
                            (WINDOWPROP WindowOrStream 'TEXTSTREAM]
          (SETFILEPTR Stream 0)
          (SKIPSEPRS Stream PC.PointsTeditReadTable)
          (until (EOFP Stream) do [SETQ Pair (OPENTEXTSTREAM (MKSTRING (READ Stream PRT]
                                  (SKIPSEPRS Pair)
                                  (until (EOFP Pair) do (SETQ CH (READ Pair))
                                                        (if (AND X Y)
                                                            then        ;  too many; error
                                                                 (GO ERROR)
                                                          elseif (NUMBERP CH)
                                                            then (if X
                                                                     then
                                                                     ; Add to set of points
                                                                          (SETQ Points (CONS (CONS X (SETQ Y CH))
                                                                                             Points))
```

```
                                                    else (SETQ X CH))
                                                else          ; not a number
                                                    (GO ERROR))
                                                (SKIPSEPRS Pair))
                                                              ; finally, check for valid points
                                (if (AND X (NULL Y))
                                    then                      ; only had one
                                        (GO ERROR)
                                  else                        ; else Reset
                                      (SETQ X (SETQ Y)))
                                (SKIPSEPRS Stream PC.PointsTeditReadTable))

    ;; success

        (RETURN (REVERSE Points))
    ERROR
        (RETURN 'ERROR])


(PC.PlotObjectLine?
 [LAMBDA (PlotObject)                                         ; Edited 27-Jan-89 17:13 by DSJ

    ;; dsj. 1/15/89.

    (PLOTOBJECTSUBTYPE? LINE PlotObject])


(PC.PlotObjectPowerCurve?
 [LAMBDA (PlotObject)                                         ; Edited 15-Nov-88 23:46 by DSJ

    ;; dsj. 11/15/88.

    (AND (PLOTOBJECTSUBTYPE? GRAPH PlotObject)
         (PROG [(ObjectUserData (PLOTOBJECTPROP PlotObject 'OBJECTUSERDATA]
               (RETURN (AND (LISTP ObjectUserData)
                            (LISTGET ObjectUserData 'PowerCurveVersion])


(PC.PlotPowerCurve
 [LAMBDA (Plot Asymptote Coeff Power)                         ; Edited 16-Nov-88 00:01 by DSJ

    ;; dsj 11/15/88. Draw a new power curve on the plot

    (GLOBALVARS PC.COEFF PC.POWER PC.ASYMPTOTE PC.PowerCurveVersion)
    (PROG (GraphObj)                                          ; Set powerfn globalvars
          (AND Asymptote (SETQ PC.ASYMPTOTE Asymptote))
          (AND Coeff (SETQ PC.COEFF Coeff))
          (AND Power (SETQ PC.POWER Power))
          (SETQ GraphObj (PLOTGRAPH Plot (FUNCTION PC.PowerFn)))
                                                              ; hang power params on plot object
          (PLOTOBJECTPROP GraphObj 'OBJECTUSERDATA (LIST 'PowerCurveVersion
                                                         PC.PowerCurveVersion 'Asymptote
                                                         Asymptote 'Coeff Coeff 'Power Power))
          (RETURN GraphObj])


(PC.PointsTeditMenuCommands
 [LAMBDA NIL                                                  ; Edited 14-Nov-88 20:43 by DSJ

    ;; DSJ 11/14/88.  Menu items for points tedit window.

    (if (AND (BOUNDP 'PC.PointsTeditMenuCommands)
             PC.PointsTeditMenuCommands)
      else (SETQ PC.PointsTeditMenuCommands (PROG [(DefaultItems (COPY (fetch (MENU ITEMS) of
                                                                                TEDIT.DEFAULT.MENU
                                                                                )))
                                                   (DeleteItems '(Quit Proofread Dictionary]
                                                              ; Find "quit" item
                                                   (for deleteitem in DeleteItems bind itemtodelete
                                                      do [SETQ itemtodelete (for item in DefaultItems
                                                                                thereis (OR (EQ deleteitem item)
                                                                                            (EQ deleteitem
                                                                                                (CAR item]
                                                              ; Remove it
```

```
                    (DREMOVE itemtodelete DefaultItems))
                        ; And add ours
                (RETURN
                 (APPEND DefaultItems
                         '(("Update Plot" (FUNCTION
                                           PC.PointsTeditUpdateFn)
                                          "Save changes and update plot")
                           ("Quit and Save"
                            (FUNCTION PC.PointsTeditQuitAndSaveFn)
                            "Close the points editor window, saving
                            changes and updating plot"
                            (SUBITEMS ("Quit and Save"
                                       (FUNCTION
                                        PC.PointsTeditQuitAndSaveFn)
                                       "Close the points editor window,
                                       saving changes and updating
                                       plot")
                                      ("Quit w/out Saving"
                                       (FUNCTION PC.PointsTeditQuitFn)
                                       "Close the points editor window,
                                       without saving changes or updating
                                       plot"])
```

```
(PC.PointsTeditQuitAndSaveFn
 [LAMBDA (Stream)                                    ; Edited 15-Nov-88 00:18 by DSJ

    ;; dsj. 11/14/88.  Save the plot's points and then quit .

    (AND (PC.PointsTeditUpdateFn Stream)
         (PC.PointsTeditQuitFn Stream])
```

```
(PC.PointsTeditQuitFn
 [LAMBDA (Stream)                                    ; Edited 14-Nov-88 23:45 by DSJ

    ;; dsj. 11/14/88.  Quit.

    (PROG [Plot Points PointObjs (PointsWindow (STREAMPROP Stream 'WINDOW]
          (TEDIT.STREAMCHANGEDP Stream T)
          (TEDIT.QUIT Stream])
```

```
(PC.PointsTeditReadTable
 [LAMBDA NIL                                         ; Edited 14-Nov-88 22:34 by DSJ

    ;; dsj/ 11/14/88.  Set up readtable for reading points tedit stream.

    (GLOBALVARS PC.PointTextDelimiter)
    (if (AND (BOUNDP 'PC.PointsTeditReadTable)
             PC.PointsTeditReadTable)
      else (SETQ PC.PointsTeditReadTable (COPYREADTABLE))      ; Dont want <CR> as a READ delimiter
           (SETSEPR (LIST 13 (APPLY* 'CHARCODE PC.PointTextDelimiter))
                    NIL PC.PointsTeditReadTable])
```

```
(PC.PointsTeditRightButtonQuitFn
 [LAMBDA (Window Stream)                             ; Edited 15-Nov-88 00:15 by DSJ

    ;; dsj. 11/14/88.  Called via right button "closew"; save points.

    (OR (PC.PointsTeditUpdateFn Stream)
        'DON'T])
```

```
(PC.PointsTeditUpdateFn
 [LAMBDA (Stream)                                    ; Edited 15-Nov-88 00:22 by DSJ

    ;; dsj. 11/14/88.  Save the plot's points.

    (PROG [Plot Points PointObjs (UpdatedFlg T)
                (PointsWindow (STREAMPROP Stream 'WINDOW]
          (if (TEDIT.STREAMCHANGEDP Stream)
              then (SETQ Plot (WINDOWPROP PointsWindow 'PLOT))
```

```
                                                    ; Read new points from the tedit window
            (SETQ Points (PC.GetPointsFromTeditWindow PointsWindow))
            (if (EQ 'ERROR Points)
                then (SETQ UpdatedFlg)
                     (PROMPTPRINT "Formatting error in points; cannot save. ")
              else                                  ; delete all old points from plot
                   (for OBJ in (PC.GetPointObjects Plot) do (DELETEPLOTOBJECT OBJ Plot T T))
                                                    ; And make new point objects in plot
                   (PLOTPOINTS Plot Points)         ; finally, mark stream as unchanged
                   (TEDIT.STREAMCHANGEDP Stream T))
        else (PROMPTPRINT "Nothing changed"))
    (RETURN UpdatedFlg])


(PC.PointsTeditWindowProps
  [LAMBDA NIL                                       ; Edited 15-Nov-88 00:10 by DSJ

    ;; dsj/11/14/88.  Props to the points tedit window.

    '(QUITFN PC.PointsTeditRightButtonQuitFn])


(PC.PowerFn
  [LAMBDA (X GraphObj)                              ; Edited 15-Nov-88 23:23 by DSJ

    ;; dsj. 11/15/88.  Call the power fn with proper params

    (PROG [(PowerData (PLOTOBJECTPROP GraphObj 'OBJECTUSERDATA]
          (RETURN (if PowerData
                      then                          ; Old obj; we're redrawing or something
                           (POWERFN X (LISTGET PowerData 'Asymptote)
                                      (LISTGET PowerData 'Coeff)
                                      (LISTGET PowerData 'Power))
                    else                            ; New obj; set params with global vars
                         (POWERFN X])

)

;; NC card type fns

(DEFINEQ

(PC.AddPlotCardType
  [LAMBDA NIL                                       ; Edited 19-Jan-89 19:18 by DSJ

    ;; dsj. 11/11/88.  Adds PLOT card type to the session.

    ;; dsj. 1/19/89.  Now calls PCP.ResetPlotMenuItems  ; LeftButtonMenuItems are inherited.
    [NCP.CreateCardType 'Plot 'NoteCard '((MakeFn PC.MakeCardFn)
                                          (QuitFn PC.QuitCardFn)
                                          (PutFn PC.PutCardFn)
                                          (GetFn PC.GetCardFn)
                                          (EditFn PC.EditCardFn)
                                          (CopyFn PC.CopyCardFn)
                                          (DirtyPFn PC.DirtyPCardFn))
                        '((DisplayedInMenuFlg T)
                          (LinkIconAttachedBitMap ,PC.PlotCardIcon)
                          (DefaultWidth 400)
                          (DefaultHeight 250]       ; Set menu items
    (PCP.ResetPlotMenuItems])


(PC.CopyCardFn
  [LAMBDA (Card FromStream ToStream Length)         ; Edited 13-Nov-88 22:59 by DSJ

    ;; dsj. 11/13/88.  Copy plot card substance.

    (LET* ((FromStartPtr (GETFILEPTR FromStream))
           (FromEndPtr (PLUS Length FromStartPtr)))
          (COPYBYTES FromStream ToStream FromStartPtr FromEndPtr))
    T])
```

```
(PC.CreatePlot
  [LAMBDA (Region Title)                                    ; Edited 30-Jan-89 16:26 by DSJ

    ;; dsj. 11/11/88.  Create a blank plot with defaults, to be displayed in the newly created plot card.

    (PROG (Plot)

     ;; Create the plot.

          (SETQ Plot (CREATEPLOT NIL Region Title))

     ;; Set up plot defaults                                 ; Set up plot labels
          (PLOTLABEL Plot 'BOTTOM PCP.BottomLabel T)
          (PLOTLABEL Plot 'LEFT PCP.LeftLabel T)
          (PLOTLABEL Plot 'TOP PCP.TopLabel T)
          (PLOTLABEL Plot 'RIGHT PCP.RightLabel T)          ; Set up plot tics
          (PLOTTICS Plot 'BOTTOM PCP.BottomTics T)
          (PLOTTICS Plot 'LEFT PCP.LeftTics T)
          (PLOTTICS Plot 'RIGHT PCP.RightTics T)
          (PLOTTICS Plot 'TOP PCP.TopTics T)                ; Add menu items
          (PC.AddPlotMenuItems Plot)
          (OPENPLOTWINDOW Plot)
          (RETURN Plot])


(PC.DirtyPCardFn
  [LAMBDA (Card)                                            ; Edited 13-Nov-88 23:06 by DSJ

    ;; dsj. 11/13/88. Plot card dirty?

    (PLOTDIRTYP (NCP.CardSubstance Card])


(PC.EditCardFn
  [LAMBDA (Card Plot RegionOrPosition)                      ; Edited  9-Jan-89 19:38 by DSJ

    ;; dsj. 11/13/88.  Bring up a Plot window.

    ;; dsj 1/9/89.  Now marks plot as not dirty. (Marking as dirty now done by plot menu)

    ;;

    (LET (Region PlotWindow Title)                          ; reshape if card already up and region given.
         (if (NCP.ReshapeWindow Card RegionOrPosition)
           else (if (SETQ Region (NCP.DetermineDisplayRegion Card RegionOrPosition))
                    then ;; Set up plot's window field to do the right thing when the plot is opened (there should be a better interface to this.)
                         (SETQ Title (NCP.CardTitle Card))
                         (replace (PLOT PLOTWINDOW) of Plot with (LIST Region Title 1))
                         (SETQ PlotWindow (OPENPLOTWINDOW Plot))

                         ;;

                         (NCP.SetUpTitleBar PlotWindow (NCP.CardType Card))
                         (PC.SetUpMiddleButtonMenu PlotWindow)
                         (MARKPLOTDIRTY Plot T)
                         PlotWindow])


(PC.GetCardFn
  [LAMBDA (Card Length NoteFileStream)                      ; Edited 14-Nov-88 15:20 by DSJ

    ;; dsj. 11/13/88.  Get the plot from the notefile.

    (LET (Plot (PlotVersionNumber (READ NoteFileStream)))   ; Read the version #
         (SELECTQ PlotVersionNumber
                  (1                                        ; Read the plot
                     (SETQ Plot (HREAD NoteFileStream)))
                  (SHOULDNT "Bad version number for Plot"))
         Plot])


(PC.MakeCardFn
  [LAMBDA (Card Title NoDisplayFlg ParamList Region)        ; Edited 15-Nov-88 01:02 by DSJ

    ;; dsj. 11/11/88.  Create a Plot card.
```

```
    (if NoDisplayFlg
        then (NCP.CardSubstance Card (PC.CreatePlot))
             Card
      else (LET (Window (Plot (PC.CreatePlot (NCP.DetermineDisplayRegion Card Region)
                                             Title)))
                (SETQ Window (PLOTPROP Plot 'PLOTWINDOW))
                (NCP.SetUpTitleBar Window (NCP.CardType Card))
                (PC.SetUpMiddleButtonMenu Window)                ;
                (NCP.CardSubstance Card Plot)
                Window])


(PC.PutCardFn
  [LAMBDA (Card NoteFileStream)                                  ; Edited 14-Nov-88 15:29 by DSJ

    ;; dsj. 11/13/88.  Put this plot out to the notefile.

    (LET ((Plot (NCP.CardSubstance Card))
          MenuUp)                                                ; Get rid of the right menu if it's up; it causes problems when
                                                                 ; bringing the card back up. Must do it before the quit fn.
         (if (SETQ MenuUp (PLOT.FIXRIGHTMENU Plot))
             then (PLOT.FIXRIGHTMENU Plot NIL))
         (PRINT PC.VersionNumber NoteFileStream)                 ; print the version #
         (HPRINT Plot NoteFileStream)                            ; And put the plot
         (AND MenuUp                                             ; Return the menu
              (PLOT.FIXRIGHTMENU Plot T))
         0])


(PC.QuitCardFn
  [LAMBDA (CardIdentifier)                                       ; Edited 13-Nov-88 23:31 by DSJ

    ;; dsj. 11/13/88.  Quit out of the plot card.

    (LET ((Card (NC.CoerceToCard CardIdentifier))
          Plot])

)

;;

(DEFINEQ

(MARKPLOTDIRTY
  [LAMBDA (Plot ResetFlg)                                        ; Edited 13-Nov-88 23:10 by DSJ

    ;; dsj. 11/13/88.  Mark the plot as dirty

    (PLOTPROP Plot 'DIRTYFLG (NOT ResetFlg])


(PLOTDIRTYP
  [LAMBDA (Plot)                                                 ; Edited 13-Nov-88 23:05 by DSJ

    ;; dsj. 11/13/88.  Is the plot dirty?

    (PLOTPROP Plot 'DIRTYFLG])


(MARKPLOTDIRTYFROMMENU
  [LAMBDA (ITEM MENU)                                            ; Edited  9-Jan-89 19:32 by DSJ

    ;; dsj 1/9/89.  This fn advises PLOT.WHENSELECTEDFN and marks the plot dirty when certain menu items are selected.

    (PROG ((NotDirtyFns '(Layout Redraw Fixed% Menu))
           Plot)                                                 ; This menu is either the cardwindow's middle button title var
                                                                 ; menu, or the attached window menu.  Plot is a menuprop in the
                                                                 ; former case but not the latter.
          (if [AND (NOT (MEMBER (CAR ITEM)
                                NotDirtyFns))
                   (SETQ Plot (OR (GETMENUPROP MENU 'PLOT)
                                  (WINDOWPROP (MAINWINDOW (WFROMMENU MENU))
                                              'PLOT]
```

```
            then                                        ; mark it dirty
                 (MARKPLOTDIRTY Plot])

)


;; Interface fns

(DEFINEQ

(PC.MiddleButtonMenuSelectedFn
  [LAMBDA (ITEM MENU KEY)                               ; Edited 13-Nov-88 23:14 by DSJ

    ;; dsj. 11/13/88.  Pass the Plot package's right button menu items' functionality onto the Plot Notecard's middle button title bar menu.  Call the
    ;; PLOT fn with the args it would expect.

    (APPLY* (FUNCTION PLOT.WHENSELECTEDFN)
            ITEM MENU)
    NIL])


(PC.SetUpMiddleButtonMenu
  [LAMBDA (CardWindow)                                  ; Edited 31-Jan-89 16:01 by DSJ

    ;; dsj. 11/13/88.  Set up special info on the middle button menu So that we can pass the Plot package's right button menu items' functionality onto
    ;; the Plot Notecard.

    (PROG [(Plot (WHICHPLOT CardWindow))
           (MiddleButtonMenu (WINDOWPROP CardWindow 'TitleBarMiddleButtonMenu]
                                                        ; We need to get back to the card's plot from the middle button
                                                        ; menu, so hang a prop
          (PUTMENUPROP MiddleButtonMenu 'PLOT Plot)     ; Put in our own selectedfn
          (replace (MENU WHENSELECTEDFN) of MiddleButtonMenu with (FUNCTION
                                                                   PC.MiddleButtonMenuSelectedFn))
                                                        ; finally, make the plot window's right button menu match the
                                                        ; middle button, in case the PCP menu items have since been
                                                        ; changed.
          (PLOTMENUITEMS Plot 'RIGHT (fetch (MENU ITEMS) of MiddleButtonMenu))
          (RETURN MiddleButtonMenu])


(PC.AddPlotMenuItems
  [LAMBDA (Plot)                                        ; Edited 20-Jan-89 18:33 by DSJ

    ;; dsj/11/14/88.  Add menu items to new plot.       ; The right
    (PLOTMENUITEMS Plot 'RIGHT (PC.GetMiddleButtonTitleBarMenuItems))
                                                        ; And the middle
    (PLOTADDMENUITEMS Plot 'MIDDLE (PC.MiddlePlotMenuItems])


(PC.MiddlePlotMenuItems
  [LAMBDA NIL                                           ; Edited 15-Nov-88 01:32 by DSJ

    ;; dsj/ 11/14/88.  Add Items to middle button plot menus.

    '(("Edit" PC.EditPlotObject "Allows you to change the parameters of selected plot object"])


(PC.GetMiddleButtonTitleBarMenuItems
  [LAMBDA (ResetFlg)                                    ; Edited 20-Jan-89 18:33 by DSJ

    ;; dsj/ 1/19/89.  Add Items to right button plot menus, for Plot card' middle button title bar menu.  Want "fixed menu" item at the end. (This fn used
    ;; to be PC.RightPlotMenuItems).

    (if (OR ResetFlg (NOT (BOUNDP 'PC.MiddleButtonTitleBarMenuItems))
            (NULL PC.MiddleButtonTitleBarMenuItems))
        then [SETQ PC.MiddleButtonTitleBarMenuItems (PROG ((DefaultItems (COPY
                                                                          PLOT.DEFAULTRIGHTMENUITEMS
                                                                          ))
                                                           FixedItem)
                                                          ; Find it
                                                          [SETQ FixedItem (for item in DefaultItems
                                                                             thereis (EQ 'Fixed% Menu (CAR
                                                                                                      item]
                                                          ; Remove it
```

```
                                                    (DREMOVE FixedItem DefaultItems)
                                                        ; And add ours
                                                    (RETURN (APPEND DefaultItems
                                                                    PCP.MiddleButtonTitleBarMenuItems
                                                                    (LIST FixedItem]
        else PC.MiddleButtonTitleBarMenuItems])

)

[XCL:REINSTALL-ADVICE 'PLOT.WHENSELECTEDFN :BEFORE '((:LAST (MARKPLOTDIRTYFROMMENU ITEM MENU]

(READVISE PLOT.WHENSELECTEDFN)

(RPAQQ PC.PlotCardIcon )

(DECLARE%: DOEVAL@COMPILE DONTCOPY

(GLOBALVARS PC.PointsTeditMenuCommands PC.PointsTeditReadTable)
)

(RPAQ? PC.PointTextDelimiter "/")

(RPAQQ PC.VersionNumber 1)

(RPAQQ PC.PowerCurveVersion 1)

;; PCP fns and vars

(DEFINEQ

(PCP.ResetPlotMenuItems
  [LAMBDA NIL                                                    ; Edited 31-Jan-89 15:26 by DSJ

    ;; dsj/ 1/19/89.  Add Items to right plot menus, and reset the Plot card's type-specific menu.  Menu items found on the globalvar
    ;; PCP.MiddleButtonTitleBarMenuItems

    [NCP.ChangeCardTypeFields 'Plot NIL '((MiddleButtonMenuItems ,(PC.GetMiddleButtonTitleBarMenuItems T]
    "Plot menu items reset."])

)

(RPAQ? PCP.BottomLabel ">> X label <<")

(RPAQ? PCP.LeftLabel "Y label")

(RPAQ? PCP.TopLabel ">> Plot name <<")

(RPAQ? PCP.RightLabel )

(RPAQ? PCP.BottomTics T)

(RPAQ? PCP.LeftTics T)

(RPAQ? PCP.TopTics )

(RPAQ? PCP.RightTics )

(DECLARE%: DOEVAL@COMPILE DONTCOPY

(GLOBALVARS PC.MiddleButtonTitleBarMenuItems)
)

(RPAQQ PCP.EditPlotObjectFns ((PC.PlotObjectPowerCurve? PC.EditPlotPowerCurve)
                              (PC.PlotObjectLine? PC.EditPlotLine)))

(RPAQQ PCP.MiddleButtonTitleBarMenuItems [("Edit Points" PC.EditPlotPoints "Allows you to add or delete points to this plot")
                                          ("Add Line" PC.AddLine "Allows you to add a straight line to this plot")
                                          ("Add Curve" PC.AddCurve "Allows you to add a power curve to this plot" (SUBITEMS
                                                                                                                   ("Add Power
                                                                                                                    Curve"
```

```
                                                                    PC.AddPowerCurve

                                                                        "Allows
                                                                        you to
                                                                        add a
                                                                        power
                                                                        curve to
                                                                        this
                                                                        plot"])
```

;; This should be an NCP fn

```
(DEFINEQ

(NCP.ReshapeWindow
  [LAMBDA (Card RegionOrPosition)                    ; Edited 13-Nov-88 22:31 by DSJ
    ;; dsj. 11.13/88.  Reshape open card window to RegionOrPosition
    (PROG ((CardWindow (NCP.CardWindow Card))
           WindowRegion)
          (RETURN (if CardWindow
                      then (TOTOPW CardWindow)
                           [if RegionOrPosition
                               then (if (REGIONP RegionOrPosition)
                                        then (if [NOT (EQUAL RegionOrPosition (WINDOWPROP CardWindow
                                                                                          'REGION]
                                                 then (SHAPEW CardWindow (NCP.DetermineDisplayRegion Card
                                                                                                     RegionOrPosition)))
                                    elseif (POSITIONP RegionOrPosition)
                                      then (SETQ WindowRegion (WINDOWPROP CardWindow 'REGION))
                                           (if [NOT (AND (EQUAL (fetch (POSITION XCOORD) of RegionOrPosition)
                                                                (fetch (REGION LEFT) of WindowRegion))
                                                         (EQUAL (fetch (POSITION YCOORD) of RegionOrPosition)
                                                                (fetch (REGION BOTTOM) of WindowRegion]
                                               then (SHAPEW CardWindow (NCP.DetermineDisplayRegion Card
                                                                                                   RegionOrPosition]
                           (FLASHW CardWindow)
                           CardWindow]))

)

;; PLOT fns patch

(DEFINEQ

(DRAWGRAPHOBJECT.NEW
  [LAMBDA (GRAPHOBJECT VIEWPORT PLOT)                ; Edited 16-Nov-88 01:36 by DSJ
    ;; dsj. 11/15/88.  Now passes GRAPHOBJECT to GRAPHFN.
    (LET* ((STREAM (fetch (VIEWPORT PARENTSTREAM) of VIEWPORT))
           (STREAMSUBREGION (fetch (VIEWPORT STREAMSUBREGION) of VIEWPORT))
           (OBJECTDATA (fetch (PLOTOBJECT OBJECTDATA) of GRAPHOBJECT))
           (XUPPER (fetch (PLOT XUPPER) of PLOT))
           (XLOWER (fetch (PLOT XLOWER) of PLOT))
           (YUPPER (fetch (PLOT YUPPER) of PLOT))
           (YLOWER (fetch (PLOT YLOWER) of PLOT))
           (GRAPHFN (fetch (GRAPHDATA GRAPHFN) of OBJECTDATA))
           (NSAMPLES (fetch (GRAPHDATA NSAMPLES) of OBJECTDATA))
           (STYLE (fetch (GRAPHDATA STYLE) of OBJECTDATA))
           (LINEWIDTH (TIMES (DSPSCALE NIL STREAM)
                             (fetch (PLOT.STYLE LINEWIDTH) of STYLE)))
           (DASHING (fetch (PLOT.STYLE DASHING) of STYLE))
           (COLOR (fetch (PLOT.STYLE COLOR) of STYLE))
           STREAMPOSITIONS)
          [SETQ STREAMPOSITIONS (NCONC1 (bind (INC ← (FQUOTIENT (FDIFFERENCE XUPPER XLOWER)
                                                                (SUB1 NSAMPLES)))
                                              for I from 1 to (SUB1 NSAMPLES) as X from XLOWER by INC
                                              collect (CREATEPOSITION (WORLDTOSTREAMX X VIEWPORT)
                                                                      (WORLDTOSTREAMY (APPLY* GRAPHFN X
                                                                                              GRAPHOBJECT)
```

```
                                                                VIEWPORT)))
                                                        (CREATEPOSITION (WORLDTOSTREAMX XUPPER VIEWPORT)
                                                                (WORLDTOSTREAMY (APPLY* GRAPHFN XUPPER
                                                                                        GRAPHOBJECT)
                                                                        VIEWPORT]
        (first (MOVETO (fetch XCOORD of (CAR STREAMPOSITIONS))
                       (fetch YCOORD of (CAR STREAMPOSITIONS))
                       STREAM)
               for PT in (CDR STREAMPOSITIONS) do (CLIPPED.DRAWTO STREAMSUBREGION (fetch XCOORD
                                                                                          of PT)
                                                                  (fetch YCOORD of PT)
                                                                  LINEWIDTH
                                                                  'REPLACE STREAM COLOR DASHING))
        (if (EQ STREAM (WINDOWPROP (fetch (PLOT PLOTWINDOW) of PLOT)
                                   'DSP))
            then (replace (GRAPHDATA STREAMPOSITIONS) of OBJECTDATA with STREAMPOSITIONS])

)

;; Computational fns

(DEFINEQ

(POWERFN
  [LAMBDA (X Asymptote Coeff Power)                    ; Edited 15-Nov-88 22:54 by DSJ
    ;; dsj. 11/15/88.  Return y = PC.ASYMPTOTE + PC.COEFF * X**PC.POWER
    (AND (NUMBERP X)
         (OR Asymptote (SETQ Asymptote PC.ASYMPTOTE))
         (OR Coeff (SETQ Coeff PC.COEFF))
         (OR Power (SETQ Power PC.POWER))
         (FPLUS Asymptote (FTIMES Coeff (EXPT X Power])

)

(RPAQ? PC.COEFF )

(RPAQ? PC.POWER )

(RPAQ? PC.ASYMPTOTE )

(MOVD 'DRAWGRAPHOBJECT.NEW 'DRAWGRAPHOBJECT T)

(PC.AddPlotCardType)

(AND (MEMBER 'NCCARDMGMT FILELST)
     (CM.AddCardMgmtToCardType 'Plot))

(DECLARE%: DONTCOPY)

(PUTPROPS NCPLOTCARD COPYRIGHT ("Xerox Corporation" 1988 1989))
```

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