National Human Exposure Assessment Survey (NHEXAS)

Arizona Study

Quality Systems and Implementation Plan for Human Exposure Assessment

The University of Arizona
Tucson, Arizona 85721

Cooperative Agreement CR 821560

Standard Operating Procedure **SOP-UA-D-30.1**

Title: Scannable Form and Data Base Definition

Source: The University of Arizona

U.S. Environmental Protection Agency
Office of Research and Development
Human Exposure & Atmospheric Sciences Division
Human Exposure Research Branch

Notice: *The U.S. Environmental Protection Agency (EPA), through its Office of Research and Development (ORD), partially funded and collaborated in the research described here. This protocol is part of the Quality Systems Implementation Plan (QSIP) that was reviewed by the EPA and approved for use in this demonstration/scoping study. Mention of trade names or commercial products does not constitute endorsement or recommendation by EPA for use.*

Scannable Form and Data Base Definition

1.0 Purpose and Applicability

This procedure defines the implementation steps for creating a scannable form and defining the database associated with the activated form. It applies to forms developed for NHEXAS Arizona, the Border Study, or other Health and the Environment projects.

2.0 Definitions

2.1 BORDER STUDY = An alias for "Total Human Exposure Arizona: A Comparison of the Border Communities and the State" conducted in Arizona by the University of Arizona/Battelle/Illinois Institute of Technology consortium.

2.2 CODE, GLOBAL: A set of standard codes used in data within the Arizona Prevention Center designating the status of a data field in three cases: datum refused, datum non-applicable, and datum missing.

2.3 HEALTH AND ENVIRONMENT PROJECTS (or H&E) = An umbrella title for all projects funded to M.D. Lebowitz and/or M.K. O'Rourke (or their designees) which examine purported or real relationships among environmental factors and any aspect of human health.

2.4 HRP SITE: The **H**ealth **R**elated **P**rofessions building, located at 1435 North Fremont Avenue; Tucson, AZ 85719. This is an annex of the Arizona Prevention Center and the primary site of NHEXAS Arizona, the Border Study, and other Health and the Environment projects.

2.5 NHEXAS Arizona: Acronym for **N**ational **H**uman **EX**posure **A**ssessment **S**urvey, a research project conducted in Arizona by the University of Arizona/Battelle/Illinois Institute of Technology Consortium.

3.0 References

"TeleForm Standard: User Guide Version 5" Cardiff Software. Co. 1991-1996

4.0 Discussion

Data scanners are now a cost-effective method of entering data. Bubble fields are

entered with virtually 100% accuracy. Technology to recognize constrained written numeric fields are available with near 100% accuracy. Use of this technology for the entry of data is quick and accurate. Scannable forms will be used in the field, lab, sample tracking and data entry portions of the project whenever possible.

5.0 Responsibilities

The Project Data Coordinator is responsible for creating the forms, defining the database(s) and writing the coding instructions for the Arizona Lab Data form. These responsibilities may be delegated.

6.0 Materials and Reagents

H&E Local Area Network

7.0 Procedural Steps for Form Creation and Data base Definition

The Teleform Program Manual instructs the user on creating a scannable form and database. A Sample Form is enclosed in Appendix A. The Teleform Program Manual pages on form creation are located in Appendix B. Appendix C describes important factors related to form Reproduction! MLO 11/20/97

8.0 Records

The variable names and database structure are defined in the Cleaning SOP's. See Table 1.

Inclusions:

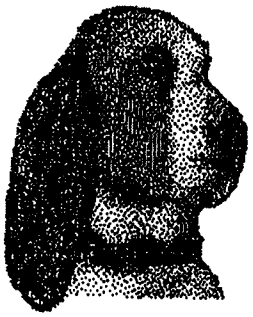
Table 1: SOP List (1 page)
Appendix A: Sample A (1 page)
Appendix B: Creation of Scannable Forms (30 pages)

Table 1: SOP List

SOP #	Form Name	Appendix for Variable Name	Appendix for Database Structure
UA-D-17.X	Descriptive Qx	Appendix A	Appendix B
UA-D-18.X	Baseline Qx	Appendix A	Appendix B
UA-D-20.X	Time/Activity Qx	Appendix A	Appendix B
UA-D-21.X	Food Diary Follow Up Qx	Appendix A	Appendix B
UA-D-22.X	Follow Up Qx	Appendix A	Appendix B
UA-D-24.X	Food Diary Check	Appendix A	(*)
UA-D-24.X	Sentinel Filter Pre-Weighing Form	Appendix B	(*)
UA-D-24.X	Sentinel Filter Post-Weighing Form	Appendix C	(*)
UA-D-24.X	Teflo Filter Pre-Weighing Form	Appendix D	(*)
UA-D-24.X	Teflo Filter Post-Weighing Form	Appendix E	(*)
UA-D-24.X	Vacuum Filter Pre-Weighing Form	Appendix F	(*)
UA-D-24.X	Vacuum Filter Post-Weighing Form	Appendix G	(*)
UA-D-24.X	Vacuum Dust Characterization	Appendix H	(*)
UA-D-24.X	Soil Characterization	Appendix I	(*)
UA-D-24.X	XRF Analysis	Appendix J	(*)
UA-D-36.X	Technician Walk Through	Appendix A	Appendix B
UA-D-38.X	Floor Dust Sampling	Appendix A	Appendix B
UA-D-38.X	Household Sampling Summary	Appendix C	Appendix D
UA-D-38.X	Personal Air Sampling	Appendix E	Appendix F
UA-D-38.X	PID Sampling	Appendix G	Appendix H
UA-D-38.X	PM Sampling	Appendix I	Appendix J
UA-D-38.X	Sentinel Sampling	Appendix K	Appendix L
UA-D-38.X	Soil Sampling	Appendix M	Appendix N
UA-D-38.X	Surface Sampling	Appendix O	Appendix P

Appendix A: Sample Form

30662



Elfin Forest Basset Ranch

Puppy Order Form

Please completely fill in all information!

☐☐ How many puppies do you want?

Rank the disposition you prefer:
(1=preferred, 4=not preferred)

	1	2	3	4	
○ Male	○	○	○	○	Playful
○ Female	○	○	○	○	Sleepy
	○	○	○	○	Loyal
	○	○	○	○	Aggressive (sorry, not in stock)

Deliver puppies to:

First Name ☐☐☐☐☐☐☐☐☐☐ **I.** ☐ **Last Name** ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Number & Street Address

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

City ☐☐☐☐☐☐☐☐☐☐ **State** ☐☐ **Zip Code** ☐☐☐☐☐ - ☐☐☐☐

CHAPTER 5
Building a Sample Form

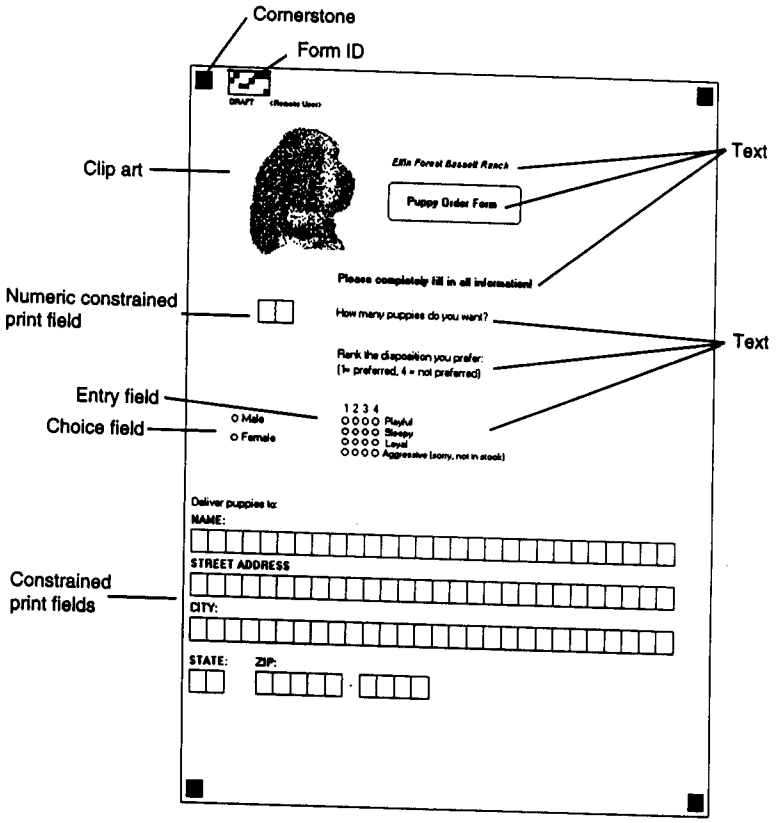
About this Chapter

This chapter will guide you through the entire form design process, including creating a simple order form, reviewing the form, setting an export format, activating and distributing the form, and receiving and correcting returned responses. This chapter assumes you are familiar with the basic concepts of form design discussed in the previous chapter.

Building Your First Form

Now that you know how to add, move, size, group, and edit objects on a form, the best way to learn about the rest of Teleform *Designer's* capabilities is to build an entire professional form from beginning to end. This chapter will guide you in building the sample puppy order form shown on page 3 in this chapter. During the process, you will:

- Add text
- Add clip art
- Add a shape
- Configure alphabetic and numeric constrained print fields
- Add constrained print fields from the library
- Configure an entry field and a choice field
- Setup an export format
- Save, print, and activate the form



Sample Order Form that will be built in this section

SOME FORETHOUGHT ABOUT DATABASES

Forms are designed to collect data. When forms designed with Teleform are filled out, the data can be automatically entered into your computer when the form is faxed or scanned. One very important thing to remember as you design a form is this:

> *The decisions that dictate how your returned data will be handled are made as you design your form.*

When you define a database to store your form data, you have already made decisions that affect your form, and your form must conform to them. It's too early to worry about that just yet. However, helpful tips related to database issues are included with related topics in this chapter. More details about how Teleform works with your database are introduced in subsequent chapters.

DATABASE TIP:
One of the keys to reliably collecting data from returned forms is to take the time to plan the data entry fields in your form and to correctly relate them to your database files.

In the instructions that follow, each step is numbered and includes details on how to make selections from menus and set values in dialog boxes. To give you a fast introduction to Teleform's features, this example is abbreviated and does not describe every possible option and feature.

- *The diamond symbol will indicate helpful instructions as you work through this chapter.*

GETTING STARTED

Create a new form

Begin by opening a new blank form.

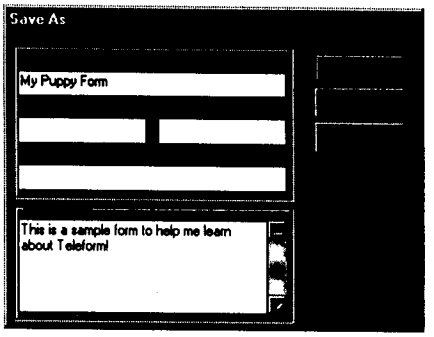
- *Create a new form by selecting 'New' from the File menu.*

Save the Form

As you design your form, you should save it regularly.

- *Choose 'Save' from the File menu or click on the*  *Save button. Give this form the name "My Puppy Form"*

The first time you save a form, you'll be prompted to name it.



You can enter any title, up to 29 characters. If you like, you can enter 29 characters of information about the author and a 255 character form description.

TELEform

ADDING TEXT TO THE FORM

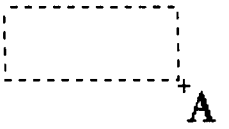
For the sample form, you will need to create a text object for each phrase in the bullet list below.

- Elfin Forest Bassett Ranch
- Puppy Order Form
- Please completely fill in all information!
- How many puppies do you want?
- Rank the disposition you prefer: (1= preferred, 4 = not preferred)
- Deliver puppies to:
- Playful
- Sleepy
- Loyal
- Aggressive (sorry, not in stock)

This section will show you how to create the first text object and then leave you to create the remaining ones. Place each phrase in a separate text object and then resize the text field so that it just fits around the text.

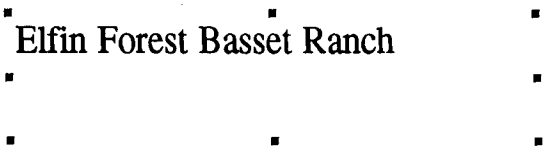
To add text:

1. Click on the Text button on the Tool bar, or choose Shape menu - Text. The cursor changes to resemble the text button.
2. Place the cursor on the form, hold down the left mouse button, and drag a rectangle representing the area to contain the text.

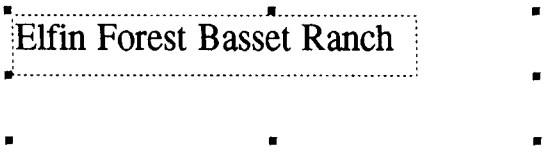


As soon as you release the mouse button, the rectangle changes to display the handles of a selected text object with a text cursor in the upper left corner.

3. Type the desired text inside the box, using the [Enter] key to start a new line. If you do not start a new line, the text will automatically wrap within the specified text field area.



4. After entering the text, you can resize the text object to fit the text by grabbing one of the handles with the pointer and dragging inward or outward until the desired size is achieved.



Resizing a Text object

- Resizing a text object does not change the size of the text, only the way that the text wraps inside the field.

5. (Optional) With the cursor visible in the text object, click on the horizontal center tool to center the text within the field.
6. Repeat steps 1 - 5 (or 6) to create a separate text object for each of the bulleted text items listed in the beginning of this section. The next section will show you where to position each text object.

Changing the Font of Text Objects

You can quickly change the font attributes of text objects as so:

1. Select the desired text object(s).
2. Click on the Font button, select the desired font attributes and click OK.

POSITIONING TEXT ON THE FORM

1. After you have created the text objects, click on the Pointer button, and click on a text object.

   When you click on the text with the pointer cursor, Teleform treats it like an object that you can move to a new location. You can position the text object anywhere on the form by dragging it.

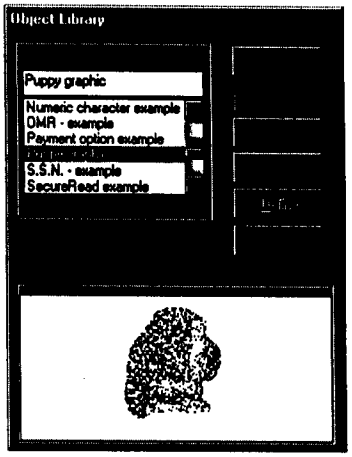
2. For the sample form, move the text objects into position as shown on the next page.

ADDING AN IMAGE FROM THE LIBRARY

The image of the puppy used in the sample form is in Teleform's library. You can add your own clip art to the library using the instructions in Chapter 7, "Configuring Shapes, Text, and Graphics".

To add the picture of the puppy to the form:

1. Choose 'Library' from the Shape menu. The Object Library dialog box opens:



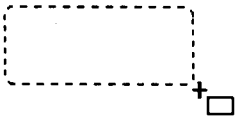
2. Click on the selection called "Puppy graphic," and then click on the Paste button. Position the cursor on the form and click to paste the graphic.
3. Resize the object as desired and position it on the form.

ADDING A SHAPE

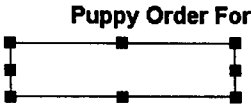
Teleform lets you create lines, circles, rectangles, and rounded rectangles with a variety of line styles and fills. In this example, you'll create a rounded rectangle to place around the words "Puppy Order Form."

To create the rounded rectangle:

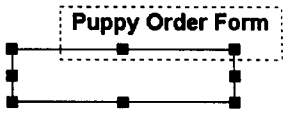
1. Open the Shape menu and select 'Round Rectangle'. The cursor changes to a round rectangle.
2. Click on the starting point for the rounded rectangle and drag until the rectangle is the size you want. You can always resize it later.



3. Click on the rectangle and drag it until it is positioned over the words "Puppy Order Form."

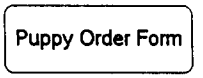


Click on the rounded rectangle.



Drag it.

Position it over the text.



Release the mouse button.

4. If the text is obscured, select the round rectangle and choose 'To Back' from the Object menu, or define the shape as transparent by selecting Attributes from the Object menu and clicking on the Hollow radio button.

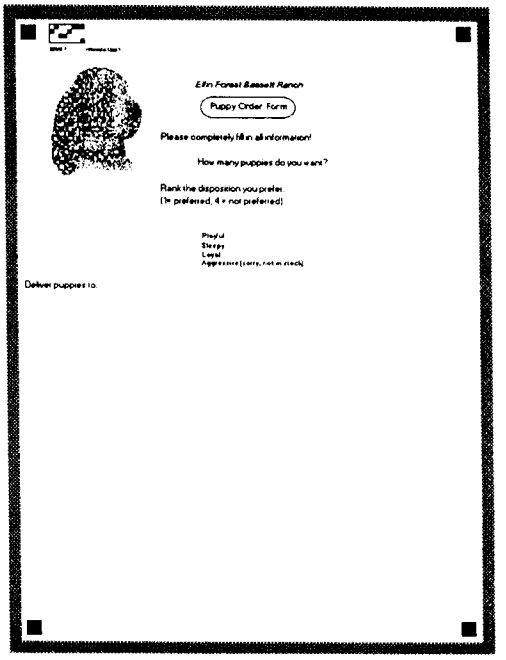
GROUPING OBJECTS

If you want to move the rounded rectangle and the text at the same time, (or any number of objects, for that matter) an easy way to do it is by grouping them first.

♦ **To group objects:**

1. Choose the objects to group by holding the [Ctrl] key and clicking on each object you want to include in the group, or use the rubberband method discussed in Chapter 4, "Designing Forms: Teleform Designer".
2. Click on the Group button in the Tool bar, or choose the 'Make Group' command from the Object menu.
3. The individual objects are now grouped and can be moved together as one object.

With the text, clip art, and the rounded rectangle added, your form should look something like this:

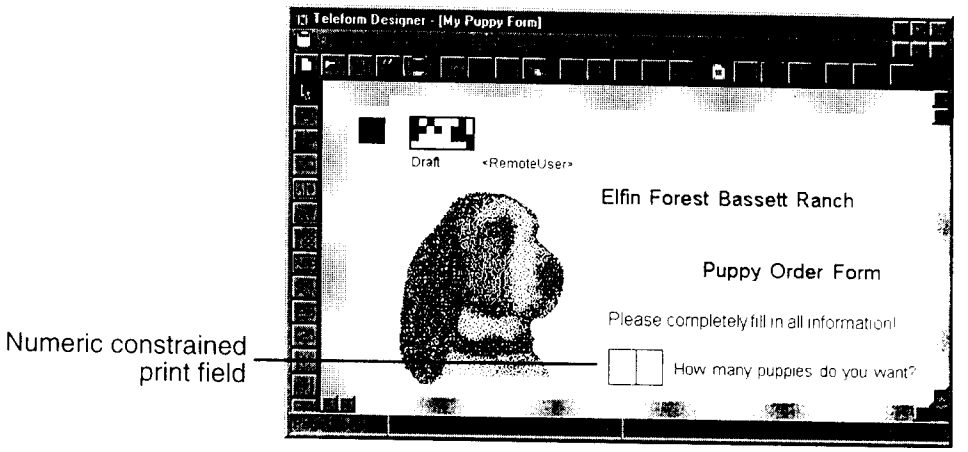


CREATING SAMPLE ALPHABETIC AND NUMERIC PRINT FIELDS

Constrained print fields are data entry fields in which form users hand-print one character in each box. These fields can contain numbers, letters, or a combination of letters and numbers, depending on how the field was defined. When the characters are filled in correctly, Teleform can interpret them. (Refer to Chapter 6, "Configuring Data Entry Fields" for more details)

For the sample form, you'll create a numeric constrained print field and an alphabetic constrained print field. Then, you'll add three more constrained print fields using Teleform's object library.

In this example, the numeric constrained print field (to accept the number of puppies ordered) is two characters long, accepts numbers only, and must be filled in.



To create a numeric constrained print field:

1. Click on the Constrained Print Field button, or choose 'Constrained Print' - 'Standard' from the Shape menu.
2. Click on the location in the form where you want the field. The Constrained Print Field Attributes dialog box opens, presenting formatting options for the field.
3. Although Teleform automatically provides a field ID, enter the word "Quantity" in the Field ID box. This makes it easier to review the fields on the form, and also to build a data file for returned orders.

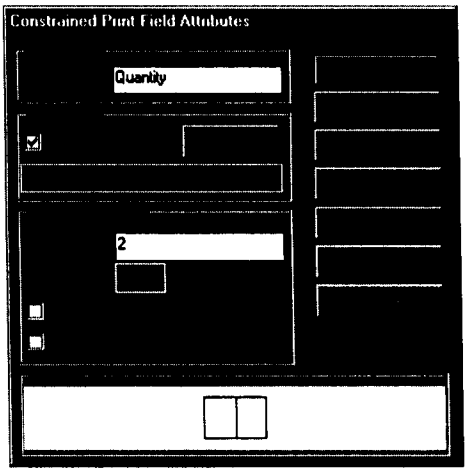
TELEform

DATABASE TIP:
When entering Field ID's, define each data field so that it corresponds to a field in your database and the type of data it expects (if applicable). Teleform will automatically make sure that each field on the form has a unique name.

4. Click on the Setup button to open the Recognition Setup dialog box and select 'Numeric' as the expected character type. Click OK to return to the Attributes dialog box.

5. Enter "2" in the Template box to create a constrained print field 2 characters long.

   The Constrained Print Field Attributes dialog box should look like this:



6. Click on the Constraints button to open the Constraints dialog box and select the 'Entry Required' checkbox. This tells Teleform to hold the form for verification if this field isn't filled in.

7. Click OK on the Object Constraints dialog box, and then click OK on the Print Field Attributes dialog box to accept the settings and place the constrained print field on your form.

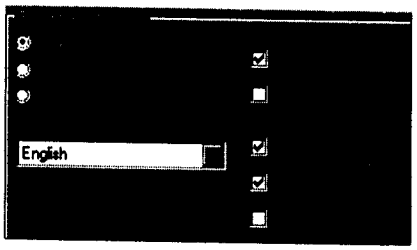
To create an alphabetic constrained print field:

The second print field in the example is used for the customer's name, so you'll define it as an alphabetic print field.

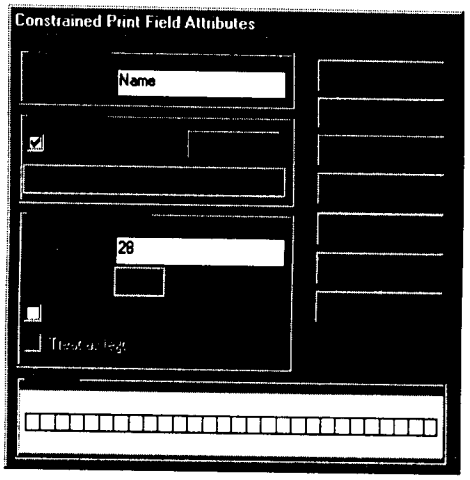
1. Click on the Constrained Print Field button, or choose 'Constrained Print' - 'Standard' from the Shape menu.
2. Click on the location in the form where you want the field.

   The Constrained Print Field Attributes dialog box opens, presenting formatting options.
3. Enter "Name" in the Field ID box.
4. The name is 28 letters, so in the Template box, enter 28.

   Note that underneath the Template box, the Length box shows you the number of characters needed for this database field when exporting.
5. Click on the Setup button to open the Recognition Setup dialog box and select the 'Alpha' option. This tells Teleform to expect alphabetic characters only in this field, not numbers.



6. Click OK to return to the Attributes screen, which now looks like this:



In the lower left side of the Attributes dialog box, note that the 'Treat as Text' box is automatically checked and grayed. This is because alphabetic characters must always be text. (as opposed to numeric values)

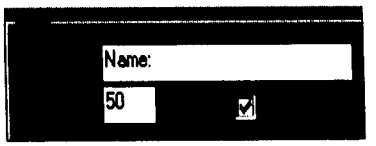
7. Click on the Constraints button and check the 'Entry Required' box on the Object Constraints dialog box. This tells Teleform to hold the form for verification if this field isn't filled in. Click OK to return to the Attributes dialog box.

8. Click OK on the Print Field Attributes dialog box to accept the settings and place the constrained print field on your form.

Adding A Title to the Name field

Rather than having to create a separate Text object to label this field, you can click on the Title button to open the Field Title dialog box and create the title there. (Refer to Chapter 6 "Configuring Data Entry Fields" for additional information)

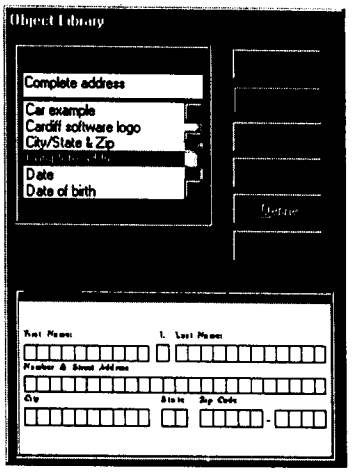
1. Double-click on the field to open the Attributes dialog box.
2. Click on the Title button.
3. In the Text box, enter the word "Name:" and click OK.



ADDING OBJECTS FROM THE LIBRARY

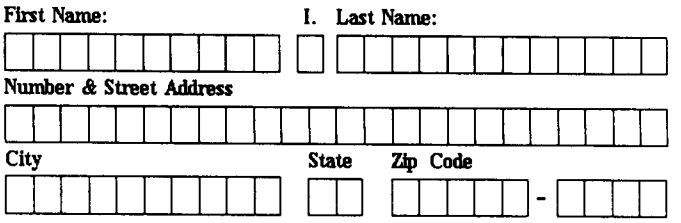
A fast way to add data entry fields to your form is to choose them from Teleform's Library. The library includes a set of frequently used data entry fields, and you can add your own as well. In this example, you'll add a group of constrained print fields for storing a complete address from Teleform's object library. (Refer to Chapter 6, "Configuring Data Entry Fields", for more details).

1. Choose Library from the Shape menu.
2. In the Object Library dialog box, scroll down the list and select 'Complete Address' from the list.



Note that a sample of your selection is displayed at the bottom of the dialog box so that you can preview it before adding it to your form.

3. Click on the Paste button and then click on your form to paste the object there. After the object is on your form, you can "drag-and-drop it" to the desired location.

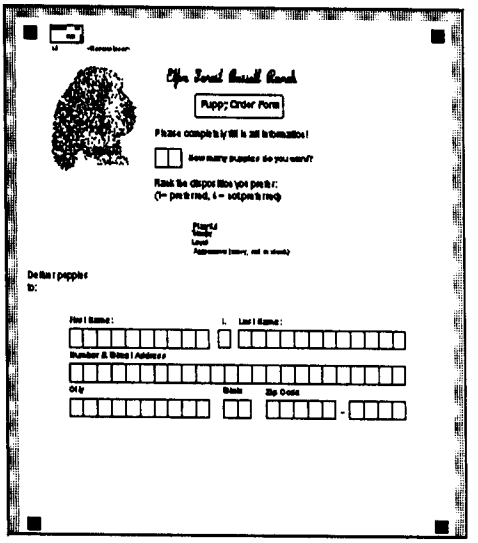


4. If desired, you can change the individual attributes of these pasted objects, however, since these fields are grouped, you will have to select the group and apply the 'Break Group' command from the Object menu before you can edit the field attributes.

   To edit an object's attributes, (such as Field ID, length, title, and such) simply double-click on that object to open its Attributes dialog box. Click OK to accept any changes or Cancel to close the dialog box without making changes.

TELEform

Your form should now look similar to this:



To complete the form, you will next add an entry field and a choice field.

CREATING AN ENTRY FIELD

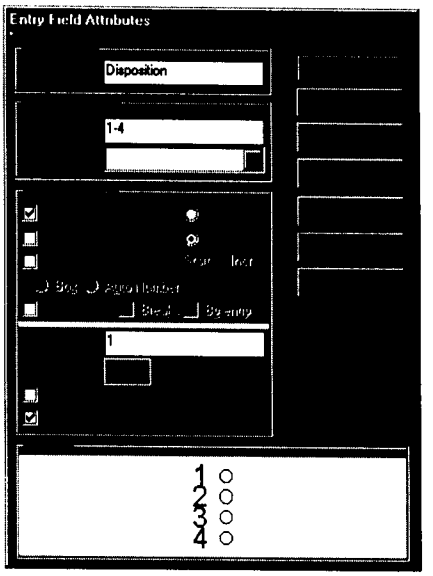
Entry fields are rows and columns of bubbles, each representing a particular choice or option. The form recipient fills in the bubbles to indicate a selection. The entry fields in the sample form give the form user four choices for ranking their preference for the disposition of the puppy being ordered.

1 2 3 4
○○○○
○○○○
○○○○
○○○○

To create an entry field:

1. Click on the ■ Entry field button, or choose 'Entry' from the Shape menu.
2. Select a location for the Entry field and click. The Entry Field Attributes dialog box opens so you can configure the field.
3. Enter a descriptive word for the Field ID, such as "Disposition".
4. Uncheck the 'Show Entry' option to remove the boxes above the field.

5. Click on the 'Horizontal' option to set the field's orientation.
6. Enter 1-4 in the Range of Values box. This defines the number of bubbles to be created horizontally.



7. Make sure the 'Show Value' option is checked. This causes the numbers 1 through 4 to be displayed across the top of the entry field.
8. Enter 4 in the Template box. This creates four bubbles vertically for each of the values.
9. Choose 'Treat as Text' as the storage option, since these values won't be used for numeric computation.
10. Click on the Constraints button and check the 'Entry Required' box on the Object Constraints dialog box so that Teleform will hold returned forms for verification if the field isn't filled in when the form is returned.
11. Click OK on the Object Constraints dialog box, and then click OK on the Print Field Attributes dialog box to accept the settings and display the constrained print field on your form.

Remember that the only text that automatically displays with an entry field is the range of values. The dispositions, "playful", "sleepy", and so on, are separate text objects.

TELEform

CREATING A CHOICE FIELD

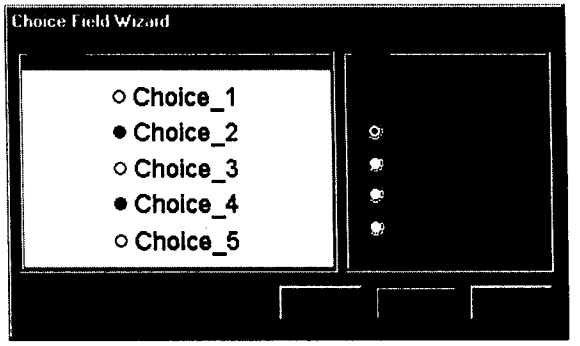
Choice fields are made up of individual choices that the form user can select. Each choice is composed of a bubble, associated display text, and a separate user-defined storage value. The form user darkens a bubble to indicate a selection. In this example, there are two bubbles that the form user fills in to specify the gender of the puppy.

○ Male

○ Female

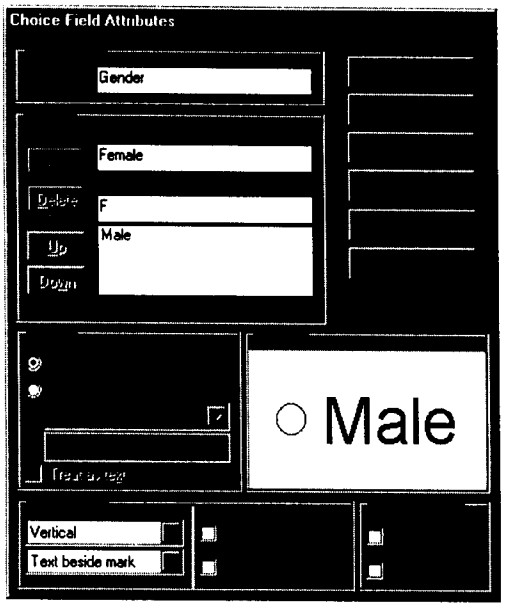
To create choice fields:

1. Click on the ■ Choice Field button, or open the Shape menu and select 'Choice Field' - 'Standard' The Choice Field Wizard dialog box displays:



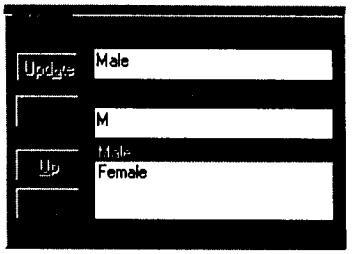
2. Select 'Bubble' and click 'Next'.
3. When prompted for the arrangement option, select 'Vertical' and click 'Next'.
4. When prompted to select manual or assisted entry, select 'Manual Entry' and click 'Next'. This opens the Choice Field Attributes dialog box.
5. Click on the location in the form where you want to place the choice field.

The Choice Field Attributes dialog box displays:



6. In the Field ID box, enter the word "Gender".
7. In the Display box, type the word "Male" and click the Add button. This creates a choice bubble with the word "Male" next to it.
8. In the Display box, type the word "Female" and click the Add button. This creates another choice bubble with the word "Female" next to it.
9. Select the word 'Male' from the Choices list and enter an "M" in the 'Store in database as' box.

   This instructs Teleform to store an "M" in the database when this choice is selected (instead of the word "Male"). If you leave the storage field blank, the display value is used by default.

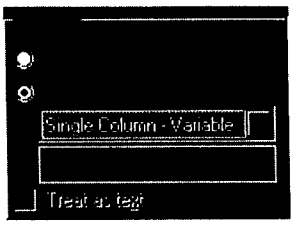


10. Assign the storage value "F" to the female choice and click on the Update button. (i.e. select the word 'Female' from the Choices list and enter an "F" in the 'Store in database as' box.)

11. Make sure the 'Vertical' arrangement option is selected to align the choice boxes vertically.

12. Click on the 'Entry Required' check box so Teleform will hold the form for review if the choice field isn't filled in when the form is returned.

13. Click on the 'Multiple choices permitted' check box to allow selection of both genders; for example, if the customer does not have a gender preference or wants one of each kind.

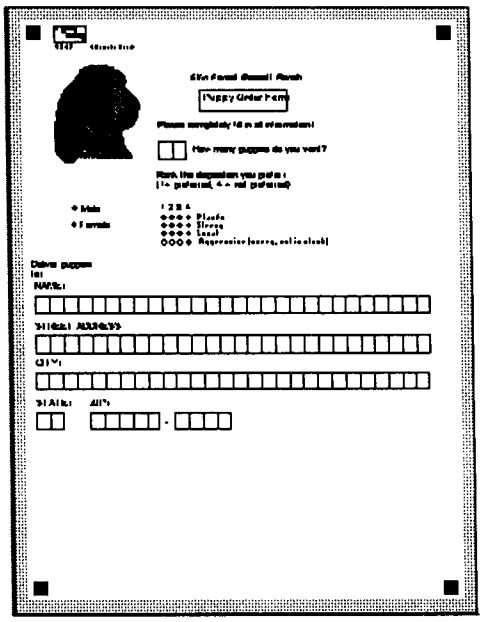


14. Select 'Single Column - Variable' from the list. This will reserve one column in the data file, regardless of the number of choices selected.

15. Look in the preview window to view the results, and then click OK to accept and save the field.

    At this stage, you've added all of the required objects to the form and it should look like the illustration on the following page.

    Make sure to save your form before continuing.



Finalizing Forms

Although the above form looks complete, adding objects to a form is only part of the form design process. You must now think about how you want Teleform to handle the data from returned forms and set the form and field attributes accordingly. The rest of this chapter will outline how to finalize the form, print it out, distribute the form, and prepare to receive responses. These procedures are abbreviated and do not describe every possible option and feature. Refer to the suggested chapters for detailed information about each topic.

REVIEWING THE FORM

After the form is designed, you should review each data field to make sure that is has been configured properly. For instance:

- if a field's value is supposed to be a number, make sure the expected character setting is 'Numeric'. Likewise, make sure that alphabetic fields are designated as 'Alpha', and that fields expecting both numbers and letters are configured as 'AlphaNumeric'.

- if you want a numeric value to be stored as a character string, select the 'Treat as Text' option.
- if want to set any field constraints, such as 'Always Review' or 'Entry Required', make sure that you have checked the appropriate options for the field.

Selecting an Auto Export Format

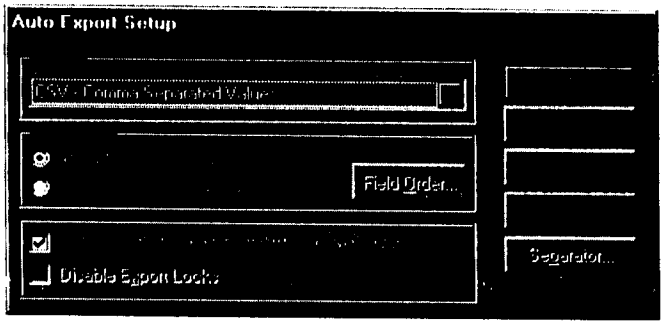
Now that you have created the fields to collect the data, you must instruct Teleform what to do with that data each time a form is filled, returned, and evaluated. Typically you want to export the form's information to a data file or to a database application.

Teleform can automatically export your data after it has been processed (using the 'auto export' feature), but you must first tell Teleform where and how to export it. You can choose the format in which the returned data is exported by Teleform.

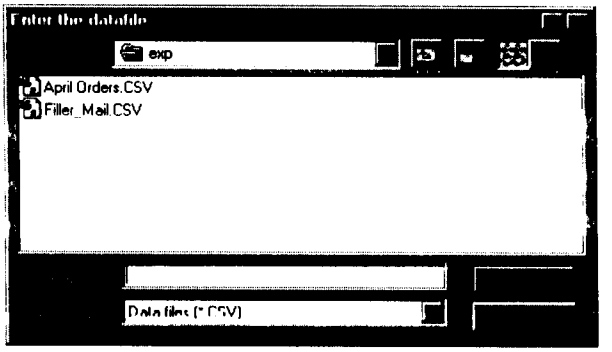
For this example, we'll setup an auto-export format for the Puppy Order Form so that the returned data will be automatically exported to a comma-separated text file.

Selecting an Auto Export Format

1. Select the 'Auto Export Setup' command from the Form menu. This opens the Auto Export Format dialog box in which you can choose the format.



2. Choose CSV (comma separated values) and click on the Save As button. The 'Enter the Datafile' dialog box displays so that you can name the file to which the data will be saved and also specify the directory.



Note: By default, Teleform stores the file in the \TELEFORM\EXP directory. You can change the file's name and location as desired.

3. Click on the Save button. When this form is completed and returned, the data will be automatically exported to this text file after processing.

Refer to Chapter 10, "Finalizing Forms" for additional information about Auto Export.

Activating Your Form

You can save your form at any point in the design process (and you should do so often!), however, the data on a form cannot be interpreted by Teleform until the form has been "activated". After a form is activated, you can no longer make changes to it that involve adding or moving fields, so you should only activate the form when you are sure it is finished.

If you make changes to an activated form, you must save the form under a new name, and then activate this new form. The following sections describe how to activate a form.

IMPORTANT!
Teleform can only read data from activated forms. You must activate the form before you send it. Refer to Chapter 10, "Finalizing Forms" for additional information about Activating a form.

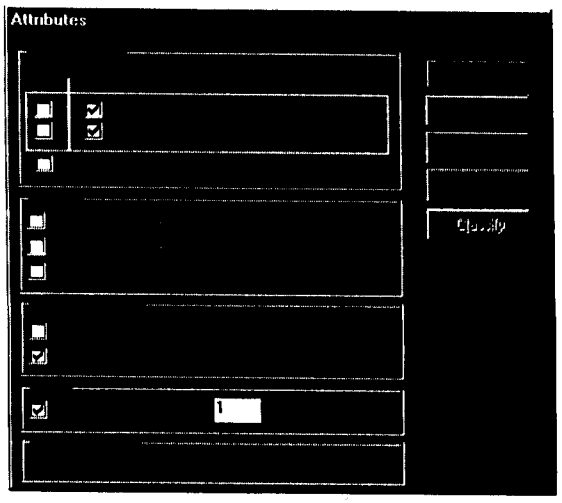
TELEform

When you print a draft of a form, it often looks good enough to use, but until you activate it, Teleform will not read the data on it when it is returned. A form that has not been activated is indicated by the word "DRAFT" under the form ID block.

When draft forms are received, Teleform treats them as regular faxes and does not try to interpret them.

To activate a form:

1. If not already done, save the form (File menu - 'Save').
2. Open the Form menu and choose 'Attributes'.
3. In the Attributes dialog box, click on the Activate button.



Teleform reminds you that activating the form will prevent further changes to it. If changes are needed, you can make a new, unactivated version using the 'Save As' command on the File menu.

4. Click OK to acknowledge and save settings.

Each activated form is assigned a unique numeric text version of the form ID which is used to identify the form when returns are received by Teleform *Reader*.

34864 <Remote User>

Refer to Chapter 10, "Finalizing Forms" for more details about activating forms and editing forms that have been activated.

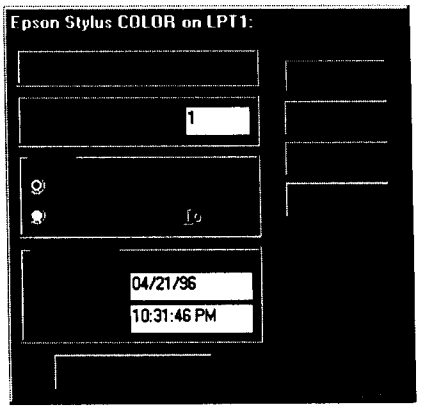
Printing Forms

While forms created with Teleform can be printed on most printers supported by Microsoft Windows, the best results and most reliable form interpretation occur when forms are printed on a laser printer or a quality ink-jet printer.

Note: It's important to remember that, while they look good enough to send, forms received or scanned before they have been activated cannot be interpreted by Teleform.

To a print a form:

1. Click on the Print button, or choose 'Print' from the File menu.



2. In the Print Options dialog box, enter the number of copies to print and the page range.
3. Click on the Print button.

Printing non-activated forms

When you print a form that hasn't been activated, the identification block will print with the word "DRAFT" under it.

Sending (Faxing) A Form

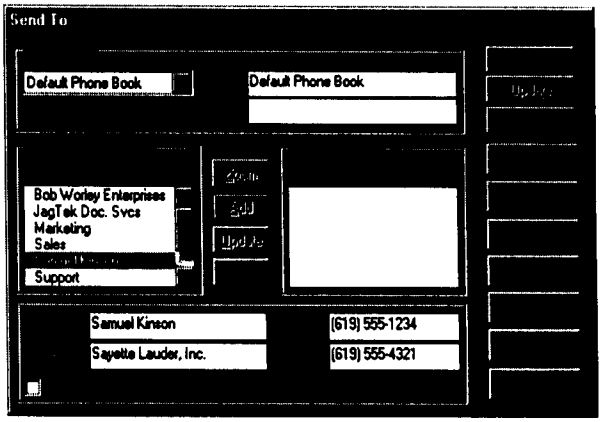
Faxing a form from Teleform is as simple as selecting a name from the Teleform Phone Book and clicking on the 'Send' button. Teleform also supports a variety of advanced sending options, such as:

- Faxing to all members of a Phone Book group
- Sending a cover sheet with the form
- Scheduling forms for later transmission
- Tracking returns
- Automatically faxing reminders to people who haven't returned forms in a specified time.

These features are discussed in Chapter 11, "Sending Forms". In this simple example, you'll add a name to the phone book and fax a form.

To fax a form:

1. Choose 'Send Fax' from *Designer's* File menu.
2. The Send To dialog box displays:



3. Choose a recipient for the form by selecting a name in the Phone Book Members list. If there are no names in the phone book, you will need to add at least one.

Adding a Name to the Phone Book

Enter a new name into the phone book by completing the Name/ Company/ Phone/Fax boxes at the bottom of the form and clicking the Add button.

4. To send the fax, highlight the recipient's name in the Phone Book Members list and click on the Send button. This initializes Microsoft Fax (or your fax server software), which schedules the fax to be sent.

   Note: Refer to Chapter 11, "Sending Forms" for additional information about using the Teleform Phone Book to schedule and fax your forms.

Receiving & Evaluating Completed Forms

Teleform receives NonForms along with Teleform forms. Although faxes can be received anytime Windows (or your fax server) is running, they can only be evaluated when Teleform *Reader* is running. *Reader* is also where Teleform's scanner controls are located, if you choose to evaluate your forms in that way. Before continuing, start Teleform *Reader.*

TELEFORM READER

Teleform *Reader* can generally run unattended, interpreting incoming form images as they are received without any intervention from you. The status bar at the bottom of the Teleform *Reader* window displays messages indicating whether it is currently evaluating a form, retrieving a fax, or sitting idle.

When an image is received, Teleform *Reader* first tries to determine if it is a valid TeleForm. If not, the document is simply stored as a TIFF image and classified as a NonForm fax. If *Reader* recognizes the image as a valid Teleform form, it interprets the data, using the form and field attributes specified in the original form's definition file.

When *Reader* interprets a form, it checks all the fields for correctness. Any fields that contain uncertain characters are held for manual review and sent to Teleform *Verifier* for correction. This can be caused by misshapen characters, fields that are incorrectly filled, fields that are defined as 'always review', empty fields that are defined as 'entry required'; or fields that do not pass a BasicScript validation.

TELEform

A scanner can also be used to interpret hard copies of completed forms. From Teleform's perspective, the process is the same as with faxes.

EVALUATING A FORM

Teleform *Reader* interprets forms that are faxed to your computer's fax modem or scanned with *Reader's* scanning utility. Whenever Teleform *Reader* is opened, your systems fax/modem interface is automatically launched, so *Reader* is instantly ready to detect incoming faxes. Depending on how your system is equipped, you can experiment with form evaluation in several ways:

- If you have access to a fax machine using a different phone line, you can fill out the Puppy Order form and fax it back to the fax modem on your system. When your fax modem receives the transmission, Teleform *Reader* will evaluate each field and save the form image.
- If you have a Teleform compatible scanner connected to your computer, you can scan the form using the 'Scan' command on Teleform *Reader's* Scan menu. As soon as the scanning is completed, *Reader* interprets the fields on the scanned image. Scanning is discussed in Chapter 12, "Evaluating Forms: Teleform Reader".

Reviewing and Correcting Completed Forms

TELEFORM VERIFIER

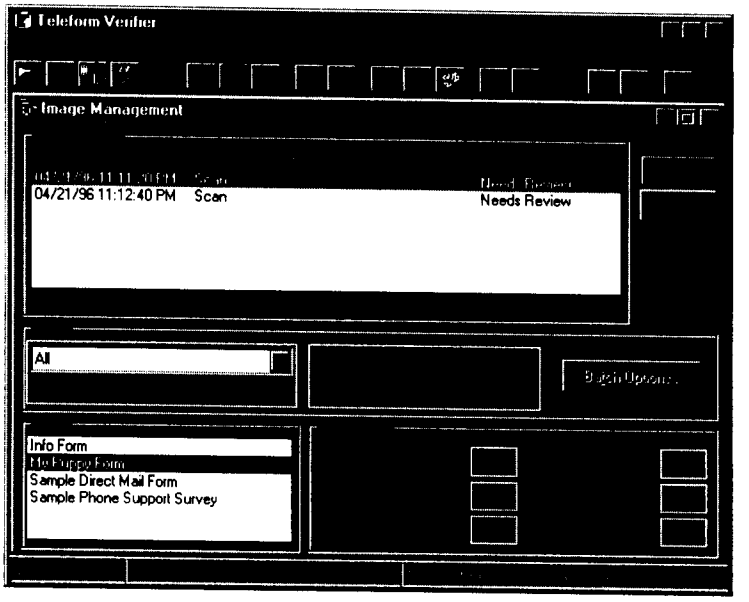
After Teleform *Reader* evaluates a form, you must use Teleform *Verifier* to vie results of the evaluation. This section provides a quick overview of how to revie form's evaluation status and make corrections to the interpreted data.

Reviewing the Form Status

1. Open Teleform *Verifier*  Teleform Verifier

   Verifier opens. displaying the Stored Images dialog box.

2. From the Forms box in the lower left, select the name of the form whose returns you wish to review. (Only forms that have received responses are listed here.)



When you select a form, each response to that form is represented as a record in the upper window. Statistical information regarding the total number and status of returned forms is shown in the Image Stats box.

Any forms containing fields that did not pass evaluation are assigned the status "Needs Review". If the form passed evaluation, it gets the status "Evaluated OK". (There are a few other status types to cover special cases, such as non-Teleform forms.)

A form's status indicates the current standing of its data. For instance:

- If a form has the status "Evaluated OK", then its data has already been stored and/or exported.
- Forms with status "Needs Review" must be corrected before their data is processed.

Verifying (Correcting) Forms

This section only provides a quick introduction to form correction to familiarize you with the basic elements of Teleform *Verifier*. For a full description of how to perform the various operations, refer to Chapter 13, "Correcting Forms: Teleform Verifier".

TELEform

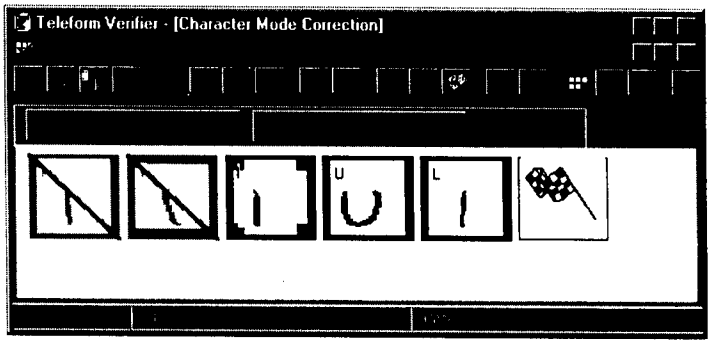
1. From *Verifier's* Stored Images list, select a record with the status 'Needs Review' and click on the Correct button. (Only forms with this status can be corrected).

   - The Character Mode Correction window opens.

   Note: By default, form correction is performed in three stages in the following order: Character Mode Correction, Field Mode Correction, and Form Mode Correction.

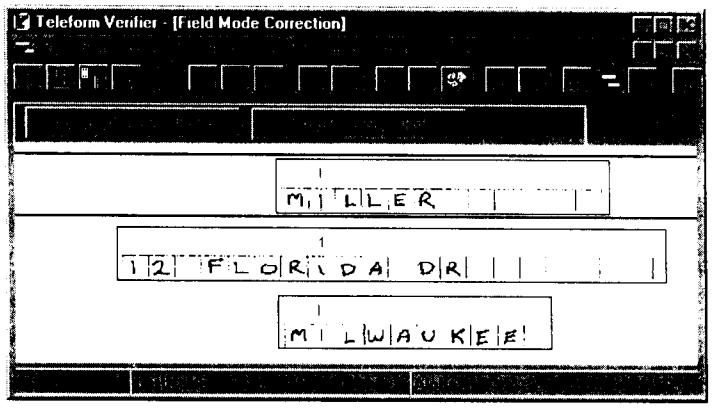
2. In Character Mode, you must review each character that Teleform *Reader* held for review. Teleform *Reader's* best guess value is shown in the upper corner of each character.

   - Starting with the upper left character, you must either accept the best guess value, hold the character for the next level of verification, or type the correct character.



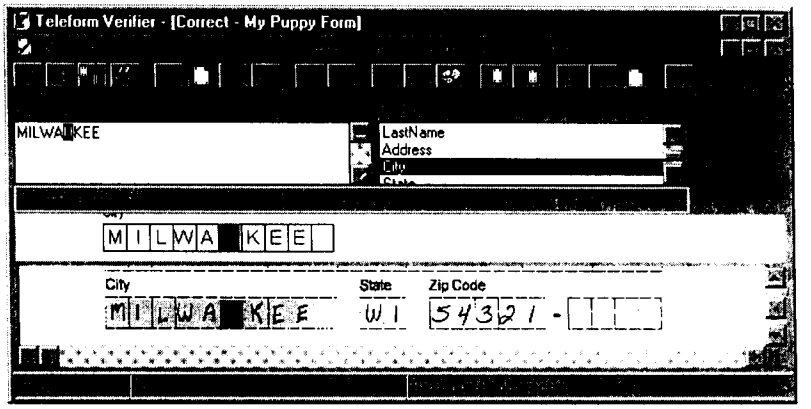
   - When you correct the last character in Character Mode, you automatically enter Field Mode Correction. In this level, you will correct those characters that were held over from the previous mode of correction.

3. In Field Mode, it is usually easy to guess what a character is because you can see it in the context of the entire field. For each field, you must either accept the best guess value, hold the character for the next level of verification, or type the correct character.



- When you correct the last field in Field Mode, you automatically enter Form Mode Correction, where you can access the entire form and confirm the entries in each field before sending the form data to be stored or exported.

4. Form mode is the final level of review and correction for a form. From here, you can edit the entire value of any field. When you save your corrections from here, the form data is stored and/or exported according to the form's export settings.



Note the following characteristics of the correction window:

- The Correction window allows you to see how Teleform interpreted each field and make corrections to the data. The first field requiring review is automatically selected with the invalid character highlighted.

- The Status bar below the New Value box indicates the review status of the highlighted character. This generally includes phrases such as, "Best Guess Character", "Unrecognized Character", "Always Review", and such. After you correct the field, its status is changed to "Evaluated OK",
- The 'New Value' box shows the characters that Teleform *Reader* interpreted and provides an area for making corrections. Characters requiring correction or verification are highlighted in the field.

5. You can select any field for editing by double-clicking on it in the image area or by selecting its name from the Field drop list.
6. Edit the field's value by typing the new information in the 'New Value' box. When the data is correct, hit Enter to automatically move to the next field requiring review (if any).
7. After you have corrected the last field requiring review, you will be prompted to save the results. Selecting "Yes" will cause the corrected data to be stored and/or exported and will end the correction process.

   After a form is corrected, its status is automatically changed to "Evaluated OK" on the Stored Images list.

Refer to in Chapter 13, "Correcting Forms: Teleform Verifier" for more detailed information about correcting returned forms.

Appendix C: Reproduction of scanable Forms

I. Issues related to Reproduction of Scanable Forms

A. The program evaluates the distance among the 4 cornerstones on the page (black boxes in each corner) and the field being scanned. In the copying process, each copy is slightly larger than the original. The size change is not at issue if it is uniform. ALL COPY MACHINES DISTORT THE IMMAGE TO SOME EXTENT. IF THE DISTORTION IS TOO GREAT THEN THE FORM WILL NOT SCAN.

B. The scanners at the University of Arizona have been designed to use 67# Bristol white paper. Normal 20# paper can not be employed by our scanners. Always use 67# white Bristol paper.

C. There can be no stray marks on the page in the scanable fields. The program may interpret these as "responses" which compromises the accuracy of the data.

D. Always work with a company that guarantees lack of distortion (and no stray marks) and agrees to take back the product if it does not scan.

E. Have a few copies made and test them on the scanner prior to placing a large order or employing the form in a study.

II. Specific Steps for copying forms.

A. Obtain an original form from the designer to get copies made. (Copying a copy adds distortion).

B. Take the form to the copier company and explain the importance of a non-distorted copy.

C. Get test copies made.

D. Complete a few forms and test them in the scanner.

E. If the form fails to scan, recontact the company and determine whether they have a better copier with less distortion. If not select a new company and try again. Repeat steps IIA-IID until at least 5 of 5 forms scan without problem.

F. When an appropriate company is identified, place the order. Copies must be made on 67 # white Bristol paper.

G. If appropriate to the form, pages can be double sided.

H. In Tucson we have identified a machine that works. All project Copying has been accomplished at:

Alphagraphics
2736 North Campbell Avenue
Tucson, Arizona
(phone: 520 327-1955)

I. The machine in this establishment with the least distortion is the "Big Machine"—a Xerox 5090.

J. The company will take back any copies that do not scan.