

An Introduction to ARRIS for AutoCAD Users

This document is intended to be a quick introduction and reference for anyone with some experience using AutoCAD. This may also be of some value to ARRIS users who must work with AutoCAD drawings and with AutoCAD users. All references to AutoCAD are to Release 13 and 14. References to ARRIS are to version 7.0.

Definitions

An AutoCAD user may be confused by some of the terminology used by an ARRIS user and vice-versa. The two CAD systems don't always use the same names to indicate similar concepts. For example, a user-created "symbol" in AutoCAD would be called a "block", while the ARRIS equivalent is referred to as a "repeated item" (often abbreviated simply as RI). In AutoCAD, you can freeze layers. In ARRIS, you don't freeze layers, you simply turn off the layer's "search" mode. In AutoCAD, you can "explode" a block. The ARRIS equivalent would be to "freeze" a repeated item.

Some additional definitions are included:

ARRIS

ARRIS is the name of a CAD software family from Sigma Design International. It is designed specifically for architects and building design professionals. The base product is called "ARRIS CAD". Often, this base product is called simply "ARRIS" or "ARRIS core". The product line includes several plug-ins (application modules), all of which serve to enhance the capabilities of the core ARRIS CAD program.

Sigma Design International

Sigma Design International is a software company with offices in New York, NY, Boston, MA and Alexandria, LA. It develops and markets ARRIS and BuildersCAD software.

AutoCAD

AutoCAD is the name of a CAD program from Autodesk. It is a general purpose CAD program used for a wide variety of applications.

Autodesk

Autodesk, Inc. is a software company based in Sausalito, California. Autodesk develops and markets a variety of software programs. AutoCAD is their primary product.

CAD

CAD is a generic term that stands for "Computer Aided Design". It describes a class of software that is used to create dimensionally accurate drawings. You may also see the term spelled *CADD*, which stands for "Computer Aided Design and Drafting". There is no difference between the classes of software referenced by these two terms.

Database

ARRIS users often use the term *database* to refer to all the drawings which are grouped together to create an entire project.

A "database" is a Windows (or UNIX) directory with a ".db" extension which is used to store a set of related ARRIS files. These files include layers (.ly), drawings (.dr), sheets (.sht), styles (.st) and a variety of other information used to manage a project.

DXF

In order to transfer drawings between different CAD systems, Autodesk created a proprietary, ASCII-based file format known as a "drawing interchange file" or "DXF" file. AutoCAD contains a command for creating a DXF file from an AutoCAD drawing. The resulting DXF file contains all of the information needed to re-create the original AutoCAD drawing. Because AutoCAD defines what goes into a DXF file, it only contains information about the types of entities that AutoCAD supports. A DXF file cannot provide a "perfect" mapping between two CAD systems due to each system's inherent differences and limitations.

The ARRIS program can import an AutoCAD DXF file into ARRIS to create an ARRIS database. It can also export a DXF file that AutoCAD can translate into an AutoCAD drawing. ARRIS can also import and export projects directly to AutoCAD's "DWG" format without going through the intermediate DXF process.

Layers

Most CAD programs, including ARRIS and AutoCAD, use the concept of layers. These can be thought of as transparent sheets of paper, or overlays, each containing different drawing elements. For example, one layer might contain walls and another layer might contain dimensions. These layers can be turned on or off (i.e. displayed or not displayed) as needed to create different sets of drawings, or to facilitate making changes to specific parts of a drawing.

AutoCAD layers are all stored in an AutoCAD drawing (the .dwg file). Layers can have names up to 31 characters long. AutoCAD layers can contain names, numbers or a combination of both. Every AutoCAD drawing must have a layer named "0".

ARRIS layers are each saved into a separate layer file inside a database (or .db directory). Every layer has a number, name, and description assigned to it. The layer numbers can be any number from 0 to 99,999,999. ARRIS layer names are used as the layer file names with a ".ly" suffix. ARRIS layer names are limited to 11 characters long. The ARRIS layer descriptions can be up to 32 characters long.

ARRIS has two different types of layers: *Model* layers are standard layers, equivalent in many ways to AutoCAD layers while in model space. ARRIS also has *sheet* layers. This would be the equivalent to your current layer in AutoCAD when you are in paper space. Sheet layers are assigned negative numbers and only contain graphics drawn at full (1:1) scale. Model layers are assigned positive numbers and contain graphics that can be drawn at any scale. Each layer can belong to any number of drawings.

Layer Properties for AutoCAD and ARRIS

AutoCAD	ARRIS	Description of Function
Current	Work	New entities are placed on this layer
Off	Display = Off	Layer is invisible (not displayed)
On	Display = On	Layer is visible (displayed)
Freeze	N/A	Layer is invisible and AutoCAD ignores this layer during <i>regens</i>
Thaw	N/A	Layer is not frozen
	Search = Off	Entities on this layer cannot be selected, counted, edited, or copied.
	Search = On	Entities on this layer can be selected, counted, or copied.
Lock	Edit = Off	Entities on this layer cannot be deleted or altered.
Unlock	Edit = On	Entities on this layer can be deleted, altered or copied

Drawings

You would think that all CAD programs could agree on the meaning of a familiar architectural term like "drawing", but unfortunately this is not the case. While both ARRIS and AutoCAD typically use *drawings* to represent a collection of layers that are grouped together to form a single plotted page, their method of storing (and sharing) *drawings* is different.

In AutoCAD, all the layers that are used to create a drawing are stored as a *single* file on the hard disk. The drawing filename is limited to eight characters and a three-letter "dwg" extension. AutoCAD drawings are often referred to simply as a ".dwg" files.

In ARRIS, all the layers that are used to create a drawing are stored as *multiple* files on the hard disk. A drawing typically consists of several layer files within one (or possibly more) database directories. The drawing filename is limited to eleven characters and a two-letter "dr" extension. The database directory name, which stores the drawings, always ends with the suffix ".db".

Sheets

ARRIS also differentiates between a "drawing" and a "sheet", AutoCAD does not. In ARRIS, a sheet contains two *sheet* layers (similar to AutoCAD's *paper space*) and typically one or more *model* layers (similar to AutoCAD's *model space*). Sheet layers can contain *viewports* (called *floating viewports* in AutoCAD). You can view and edit the model layers through any viewports on a sheet.

Colors and Pens

In both ARRIS and AutoCAD, you can assign different colors to different entities. Entities are objects on your drawing like lines, circles, text, etc. You can also assign a default color to a layer. Any entity that was drawn with its color set to "BYLAYER" in AutoCAD or to "NONE" in ARRIS will be displayed as the default color of its layer.

AutoCAD color numbers are set and can't be changed. Color number 1 is always red, 2 is always yellow, 3 is always green, etc. The colors assigned to the color numbers in ARRIS are determined by the currently loaded color map, and can be changed by the user. For example, the default color map displays color number 1 as white, 2 as pink and 3 as red. The user can edit the current color definition or open a different color map to display all entities drawn with color number 2 as any color (RGB value) he chooses.

With AutoCAD you must use a different color to represent each different pen setting for the plotter. In ARRIS, pens can be assigned to colors but they can also be assigned to specific entities, regardless of their color. Also, an entity drawn with the pen set to "NONE" will be plotted with the default pen assigned to the layer on which it is drawn. Entities with their pen set to "0" are typically not plotted.

Blocks and Repeated Items

When creating a CAD drawing, it is often useful to place certain objects or small drawings several times (i.e. furniture, fixtures, details, equipment, etc.). Rather than duplicating the graphic entities that make up these smaller drawings, it is more efficient for the CAD program to store the drawing in a library for future use. AutoCAD calls these smaller, duplicated drawings *blocks*, ARRIS calls them *repeated items* or simply "RI"s.

In AutoCAD, the block definition is maintained in a non-displayed portion of the Drawing. In ARRIS, the RI definitions are maintained in separate *repeated item libraries*.

AutoCAD block names can be up to 31 characters long, ARRIS RI names can be up to 11 characters long.

In AutoCAD, breaking a Block into its component parts is called "exploding" the block. In ARRIS, breaking an RI in to its component parts is called "freezing" the RI.

An AutoCAD block can be drawn on several different layers. When the block is created, the parts of the block on layer "0" will "float" to the current layer when the block is inserted (the "insert" layer). All other parts of the block will be placed on the layer in which the graphics were created.

An ARRIS RI can only be drawn on a single layer. It can later be inserted into any layer (like an AutoCAD block drawn on layer "0").

In AutoCAD, any drawing can be inserted into your current drawing as a block. A copy of this drawing, inserted as a block, is then placed into the block definition table of the current drawing.

In AutoCAD, any block in your current drawing can be written out to the disk as a drawing. This copies the graphics contained in the block definition table for this block out to the disk as a separate drawing file.

In ARRIS, RIs from any repeated item library can be inserted into your current drawing.

Any layer from any ARRIS drawing (or all layers from any ARRIS drawing) can be inserted at any location, scale or rotation into your current drawing. This is not an RI but simply a copy of entities and, optionally layer information, from another drawing.

Attributes

In AutoCAD you can create a block that contains non-graphic (usually textual) information called attributes. These special blocks are often referred to as "attribute blocks". Whenever this type of block is placed, its stored attributes are also placed. With ARRIS, attributes are more flexible. A Repeated Item with stored attributes can be placed with or without its associated attributes. Furthermore, attributes can be assigned to any entity type, or placed alone.

Like AutoCAD, ARRIS attributes can be constant or variable. They can be displayed or invisible. If you move or delete the RI (block in AutoCAD) the attributes associated with it are moved or deleted as well. Unlike AutoCAD, individual occurrences of attributes can be moved, without moving the RI they are attached to. Individual occurrences of an attribute can be displayed, or not displayed. Each attribute name, as well as its value, can be displayed or not displayed.

Like AutoCAD, attribute information can be queried and exported to a text file, but ARRIS also includes a report generator that can be used to easily format and generate reports including counts and totals.

Points / Symbols

The ARRIS equivalent to an AutoCAD *point* entity is also referred to as a *point* or *symbol*. ARRIS symbols can be any size or rotation and there is a large selection of symbols to choose from.

Xrefs

These are externally referenced files in AutoCAD. ARRIS has no corresponding entity type. However, all ARRIS layers can be externally referenced and can be located in the current database or any other database in the current project directory.

Linetype and Linetype Scale

ARRIS linetypes are different from AutoCAD linetypes.

AutoCAD provides a variety of named linetypes, such as hidden and dashed. AutoCAD also provides a way to create your own custom linetypes. You adjust linetypes by using the LTSCALE command to set the correct scale factor for the desired linetype.

ARRIS provides a variety of numbered line types. You can adjust the lengths of the dashes and spaces individually for each line type using the Line/Curve setup menu, or the Line/Curve status line. You can

save and later recall line settings as line styles. ARRIS doesn't have a LTSCALE command. Line dash and space lengths are given in plotted units, and are automatically scaled when placed on differently scaled drawings.

Text Style

The term "text style" means different things to AutoCAD and ARRIS users.

Any text placed in an AutoCAD drawing has a text style associated with it. AutoCAD text style definition names are maintained in a *tables* section of the drawing file. You can store many style names in a single drawing file. These style names refer to font files in the default font path and affect only the current drawing. Changing a *style definition* changes all text already placed on the drawing using this style.

Text placed in an ARRIS drawing has no associated text style. Rather, all settings such as font, size, slant, etc. are saved with each line of text on the drawing. An ARRIS text style is a collection of text parameters saved into a text style library file. When you load a text style you are simply setting all of the text settings to the way they were when the style was made. The next text you place will be placed with these settings. Changing a text style definition has no effect on any text already placed in the drawing.

Thickness

All entities in an AutoCAD drawing have a thickness value assigned to them. The default thickness value of 0 produces plainer entities (entities with no thickness). Giving a 2D entity a thickness value gives the entity *height* in its Z axis. ARRIS entities do not have a thickness value. 3D entities are drawn as such. 2D entities can be extruded to create 3D entities if required.

Regen and Display Lists

Both ARRIS and AutoCAD use *display list* technology to speed display functions such as zooms and pans.

AutoCAD creates a display list whenever you open a drawing and updates this display list as you modify your drawing. The command used to update this is the REGEN command. Some other AutoCAD commands will also force a REGEN.

ARRIS also updates the display list as you work on the drawing. ARRIS doesn't have to recreate the display list every time the drawing is opened, because it saves the display list as a separate file when you save the drawing. A separate display list file is saved for each layer in your drawing. The ARRIS equivalent to the AutoCAD REGEN command is the DISPLAY LIST CREATE command, found on the Layer Tools menu.

Extents, Limits and Zoom

ARRIS *extents* is equivalent to AutoCAD *limits*. Both features allow you to create a rectangular boundary that defines the legal *limits* or *extents* of your drawing. Both programs will not allow entities to be drawn outside of this boundary.

ARRIS *zoom extents* is equivalent to AutoCAD *zoom limits*. It zooms to the area defined as the drawing "Extents" ("Limits" in AutoCAD).

ARRIS *zoom all* is equivalent to AutoCAD *zoom extents* (not to be confused with ARRIS *extents*). This will display as large or small an area as needed to include all of the entities in the drawing.

ARRIS has no equivalent to AutoCAD *zoom all*. In AutoCAD, this displays all of the entities but never displays an area smaller than the *limits*.

Viewports, Winports, Model & Paper Space, Tile Mode, Model & Sheet Mode.

ARRIS has two layer types: *model* layers and *sheet* layers.

If you are in model space in AutoCAD (the system variable "tilemode" is set to 1), or model mode in ARRIS (working on a model layer), you can divide your display window into multiple adjacent display windows. AutoCAD calls these *tiled viewports*. ARRIS calls these *winports*.

If you are in *paper space* in AutoCAD (the system variable "tilemode" is set to 0), or in *sheet mode* in ARRIS (working on a sheet layer), you can place *viewports* (called "floating" viewports in AutoCAD). Through these *viewports*, you can display or modify entities that reside on other layers (*model* layers in ARRIS, *model space* layers in AutoCAD).

Transparent or Nested Commands

For both ARRIS and AutoCAD you can enter a command (or mnemonic) by typing in the name of the command or selecting it from a menu.

With AutoCAD, some commands can interrupt other commands. In AutoCAD, these are called *transparent* commands, in ARRIS these are called *nested* commands. AutoCAD can interrupt any command with a transparent command by picking it from the menu. If you type a transparent command while another command is running, you must precede it with a single quote mark (').

With ARRIS, each command has a command level (i.e. level 1, 2 or 3) assigned to it. Level 1 commands are considered the "highest" priority and include all *drawing* and *editing* commands. When any level 2 command (which include all *setup* commands) or level 3 commands (which include all *toggle* commands) is executed, it only "temporarily" interrupts commands of higher priority. This allows for setup parameters (i.e. pen, color, etc.) to be adjusted "on-the-fly" without interrupting the current drawing or editing command sequence.

AutoCAD Commands → Equivalent ARRIS commands

The following is a list of AutoCAD commands and their closest ARRIS equivalent. Whenever possible, the equivalent menu (or menu button) is given, rather than the mnemonic command name.

Often, the same ARRIS command is available on more than one menu. Where this is the case, only one menu location is listed. You may find an alternate menu location more accessible. In many cases, the equivalent command listed will produce the same, or nearly the same results as the AutoCAD command, but the command sequence, prompts and/or options may be quite different.

Please refer to the menu commands documentation for complete instructions on the proper use of the referenced command.

ABOUT → Query menu ⇒ ABOUT ARRIS button

Identifies the current version (or release) of the software.

ACISIN → no equivalent command

This imports an ACIS solid modeling file format file.

ACISOUT → no equivalent command

This will export entities to an ACIS solid modeling file format.

ALIGN → Edit menu ⇒ Move, Scale and Rotate button

Moves and rotates objects to align with other objects. When prompted, select a scale of 1, select "POINTS" from the rotation prompt menu.

AMECONVERT → not available and not required

Converts AME solid models to AutoCAD solid objects. AME regions or solids are converted into ARRIS entities when you import an AutoCAD drawing.

APERTURE → Modes menu ⇒ Locate Factor setting

In AutoCAD, this controls the size of the object snap target box.

APPLOAD → Plug-in Modules menu

Loads application menus.

ARC → Circle sub-menu, choose from 5 different Arc buttons

Accesses all of the various arc-drawing commands.

AREA → Query menu ⇒ AREA -or- PERIM

In AutoCAD, this calculates the area and perimeter of defined areas. With ARRIS, these are separate commands.

ARRAY → Copy menu ⇒ Array -or- Circular Array -or- Rotated Circular Array

Creates multiple copies of objects in a pattern. In ARRIS, the rectangular and two-polar arrays are each different commands.

ASE commands → Sigmac and Sirgen

In AutoCAD, ASE commands are used for accessing external databases. With ARRIS these functions are available through the use of ARRIS SIGMAC and ARRIS SIRGEN, both of which are included in the ARRIS Developer's kit.

ATTDEF → Attributes sub-menu ⇒ MAKE ATT RI button

Creates an attribute definition. In AutoCAD, an attribute is non-graphic, descriptive text associated with a block. With ARRIS attributes can be associated with a repeated item or any other entity type.

ATTDISP → Attribute Edit menu

Globally controls attribute visibility. In AutoCAD, you control the display of attribute text globally. With ARRIS, you can set the display status (on or off) for each attribute occurrence separately.

ATTEDIT → Attribute Edit menu

Changes attribute information independent of its block definition.

ATTEXT → Attrib Count menu ⇒ RI button

Extracts attribute data. This creates a text file containing all of the repeated item and attribute information. You can then use the REPORT button on the Attributes sub-menu to format and generate a report using the resulting *count* file.

ATTREDEF → Attributes sub-menu ⇒ MAKE ATT RI button

Redefines a block and updates associated attributes. To redefine a repeated item's associated attributes, enter the name of a repeated item that contains attribute information and select "yes" to the prompt "Replace existing attributes?". In ARRIS, this does not change the attributes currently assigned to repeated items that have already been placed in your drawing.

AUDIT → no menu

Evaluates the integrity of a drawing. The ARRIS *chklib* is a mnemonic command that must be typed in at the prompt line. There is no menu box for this command.

BASE → no equivalent command

Sets the insertion base point for the current drawing. In AutoCAD, if the current drawing is to be inserted into other drawings, the *base* command sets the insertion point to a point other than the drawing origin (0,0,0). ARRIS always uses the drawing origin (0,0,0) as the insertion point when you insert a layer or drawing into your current drawing. However, you can reset the drawing origin using the RESET ORIGIN button on the PROJECT SETUP AND TOOLS menu.

BHATCH → Pattern sub-menu ⇒ CHASE AREA button

Fills an enclosed area with a hatch pattern. This first computes a boundary from objects that make up an enclosed area. It then fills it with an associative hatch pattern.

BLIPMODE → Modes menu ⇒ SHOW REFERENCE BLIP setting

Controls the display of marker blips. In AutoCAD, when Blip mode is on, a marker blip displays everywhere you specify a point. With ARRIS, when SHOW REFERENCE BLIP is on, a marker blip displays at your last specified point only.

BLOCK → Repeated Item sub-menu ⇒ MAKE RI button

Creates a block definition from selected objects.

BMAKE → Edit RI (Repeated Item)

Defines a block using a dialog box.

BMPOUT → no equivalent command

Saves selected objects to a file in device-independent bitmap format.

BOUNDARY → no equivalent command

Creates a region or a polyline from an enclosed area.

BOX → Solids sub-menu ⇒ Cube button

Creates a three-dimensional cube.

BREAK → Line/Curve Tools menu ⇒ BRK button

Erases parts of objects or splits an object in two.

CAL → insert an exclamation point in front of the mathematical expression

Evaluates mathematical expressions.

CHAMFER → Line/Curve Tools menu ⇒ Chamfer button

Bevels the edges of objects.

CHANGE

Changes the properties of existing objects.

Point → Edit menu ⇒ MOVE AT SINGLE POINT button

Property → Edit menu ⇒ Properties section

CHPROP → Edit menu ⇒ Properties section

Changes the color, layer, linetype, linetype scale factor, and thickness of an object.

CIRCLE → Circle sub-menu ⇒ Radius -or- Diameter -or- Three Point Circle

Creates a circle. ARRIS uses a separate button for each circle type. ARRIS has no Tangent-Tangent-Radius Circle command.

COLOR → Status line ⇒ Color button

Sets the color for new objects. You can enter a color number or select a color from a menu. ARRIS doesn't use standard color names. Setting the color to 'none' in ARRIS is equivalent to setting the color to 'bylayer' in AutoCAD. ARRIS doesn't have an equivalent to color 'byblock'.

COMPILE → not available and not required

Compiles shape files and PostScript font files. AutoCAD .shp (shape) files must be compiled into .shx files before they can be used as fonts in a drawing. ARRIS .lt files do not have to be compiled before using them as fonts in a drawing. ARRIS can convert AutoCAD .shp and .shx files into ARRIS .lt files. ARRIS can also convert ARRIS .lt files into AutoCAD .shp files.

CONE → Solids sub-menu ⇒ Cone button

Creates three-dimensional cone object.

CONFIG → \$ARRIS/etc/arconfig (UNIX) or ARRIS70\etc\arris.ini (Windows)

Duplicates objects. Configures system parameters. For UNIX ARRIS users, this program is executed from outside of ARRIS. For Windows ARRIS users, configuration changes can be made by editing the *arris.ini* file. Refer to the Technical Reference Manual or Installation Instructions document.

COPY → Copy menu ⇒ Copy button

Duplicates objects. The ARRIS copies function automatically repeats. Press <ESC> after placing the last copy to exit the copy command.

COPYCLIP → no equivalent command

Copies objects to the Windows Clipboard.

COPYHIST → no equivalent command

Copies the text in the command line history window to the Windows Clipboard.

COPYLINK → no equivalent command

Copies the current view to the Windows Clipboard for linking to OLE applications. ARRIS does not support the Windows object linking and embedding (OLE) feature.

CUTCLIP → no equivalent command

Copies objects to the Windows Clipboard and erases the objects from the drawing.

CYLINDER → Solids sub-menu ⇒ Cylinder button

Creates a three-dimensional solid cylinder.

DBLIST → no equivalent command

Lists database information for each object in the drawing.

DDATTDEF → Attributes sub-menu ⇒ MAKE ATT RI button

Create attribute block or repeated item.

DDATTE → Attribute Edit menu

Edits the variable attributes of a block. In AutoCAD, this edits just the *variable* attributes of a block.

DDATTEXT → Attrib Count menu ⇒ RI button

Extracts attribute data. This creates a text file containing all of the RI and attribute information. You can then use the REPORT button on the Attributes sub-menu to format and generate a report using the resulting count file.

DDCHPROP → Edit menu ⇒ Properties section

Changes properties of graphic entities.

DDCOLOR → Status line ⇒ Color button

Sets the color for new entities. You can enter a color number or select a color from a menu. ARRIS doesn't use standard color names. Setting the color to 'none' in ARRIS is equivalent to setting the color to 'bylayer' in AutoCAD. ARRIS doesn't have an equivalent to color 'byblock'.

DDEDIT → Text sub-menu ⇒ Change Single -or- Change Area -or- Change Paragraph

Edits text and attribute definitions.

DDEMODES → Various menu locations

In AutoCAD, this sets properties for new objects. With ARRIS, these are set in various places

Color → Status line ⇒ Color button

Layer → Main menu ⇒ Layer button

Linetype → Line/Circle status line ⇒ Line type

Text Style → ARRIS doesn't use AutoCAD type Text styles. Use Text setup menu.

Linetype Scale → ARRIS doesn't use linetype scale

Elevation → Work Plane menu ⇒ Set Z value ⇒ Absolute or Relative button

Thickness → ARRIS doesn't assign thickness to entities.

DDGRIPS → no equivalent command

In AutoCAD, this enables grips and sets their color. ARRIS doesn't have grips.

DDIM → Dimension Setup menu

Sets various dimension parameters.

DDINSERT → Repeated Item setup menu

Places blocks and repeated items and sets parameters for scale, rotation, etc.

DDLMODES → Layer Modes menu

Controls layer settings.

DDLTYPE → Line / Curve setup menu

Controls line type settings.

DDINSERT → Repeated Item ⇒ Place Single

Inserts a block or another drawing.

DDMODIFY → Entity Query/Edit menu

Controls properties of existing objects.

DDOSNAP → Object Snap menu

"Snaps" cursor to specific objects and conditions.

DDPTYPE → no menu

Specifies the display mode and size of point objects. ARRIS symbols are equivalent to AutoCAD points. You can use the ARRIS mnemonic commands :sym to set the symbol number, :ssp to set the symbol scale and rotation and :ssy to place. Point size is always in absolute units. In AutoCAD you can set point size relative to the screen size.

DDRENAME → no equivalent command

Changes the names of named objects.

DDRMODES → Modes menu -and- Screen Modes menu

Sets drawing aids such as snap, rounding, axis, grid, etc.

DDSELECT → no equivalent command

Sets object selection modes. ARRIS doesn't support any of the object selection settings on the menu this displays. The aperture size is set with the Modes menu ⇒ Locate Factor setting.

DDUCS → Work Plane menu ⇒ Load Work Plane Style button

Manages defined user coordinate systems.

DDUCSP → Work Plane menu

Selects a preset user coordinate system. In AutoCAD, a User Coordinate System (UCS) is a movable, user-defined coordinate system. In ARRIS this is called a *work plane*.

DDUNITS → Project Setup and Tools pop-up, Input Units -and- Output units

Controls coordinate and angle display formats and determines precision. In ARRIS, angle information can not be set. It is always the same as the AutoCAD default. Angles are in degrees and decimals of a degree. A zero-degree angle is east, and positive rotation is counterclockwise.

DDVIEW → View menu ⇒ View Files section

Creates and restores views.

DDVPOINT → View menu

Sets the three-dimensional viewing direction.

DELAY → program utility: SLEEP

Provides a timed pause within a script.

DIM → not available and not required

Accesses Dimensioning mode for compatibility with previous releases. AutoCAD release 13 doesn't require the use of this command.

DIMALIGNED → Dimension Status Line ⇒ Align [ON for aligned dimensions]

In AutoCAD this command creates an aligned linear dimension. With ARRIS, you use the same linear dimension command for both aligned and non-aligned dimensions. The *align* mode can be toggled *on* or *off* from the dimension status menu.

DIMANGULAR → Dimension sub-menu ⇒ Angular Dimension button

Creates an angular dimension. ARRIS draws angular dimensions between lines, it does not have the AutoCAD angular dimension drawn to a circle or arc options.

DIMBASELINE → Dimension sub-menu ⇒ Baseline Dimension button

Continues a linear, angular, or ordinate dimension from the baseline of the previous or selected dimension. ARRIS draws linear baseline dimensions. It does not do angular, or ordinate baseline dimensions.

DIMCENTER → Dimension sub-menu ⇒ Add Circle Center Lines button

Creates the center mark or the centerlines of circles and arcs.

DIMCONTINUE → Dimension sub-menu ⇒ Running Dimensions button

Continues a linear, angular, or ordinate dimension from the second extension line of the previous or a selected dimension. ARRIS draws running, linear dimensions and can continue from an existing linear dimension. ARRIS does not continue angular or ordinate dimensions.

DIMDIAMETER → Dimension sub-menu ⇒ Circle Diameter Dimension button

Creates diameter dimensions for circles and arcs.

DIMEDIT

Edits dimensions.

Home → Dimension Query/Edit menu ⇒ Text Location ⇒ Change Selected

New → Edit menu ⇒ Entity Filter: Dimensions ⇒ CHANGE TEXT LOCATION

Rotate → No exact ARRIS equivalent, see CHANGE TEXT PLANE

Oblique → Edit menu ⇒ Area in, Stretch

DIMLINEAR → Dimension sub-menu ⇒ Single Dimension button

Creates single, linear dimensions.

DIMORDINATE → no equivalent command

Creates ordinate point dimensions.

DIMOVERRIDE → Dimension Query/Edit menu

Overrides dimension system variables.

DIMRADIUS → Dimension sub-menu ⇒ Radius Dimension button

Creates radial dimensions for circles and arcs.

DIMSTYLE → Dimension Setup menu ⇒ Styles

Creates and modifies dimension styles on the command line. An AutoCAD dimension style is a named group of dimension settings that is saved with the drawing file. An ARRIS dimension style is saved into a dimension style library file.

DIMTEDIT → Edit menu ⇒ Entity Filter: Dimensions ⇒ Change Text Location

Moves and rotates dimension text.

DIST → Query Menu ⇒ DIST

Measures the distance and angle between two points.

DIVIDE → Line/Curve Tools menu ⇒ AFFIX

Places evenly spaced point objects or blocks along the length or perimeter of an object.

DONUT → Circle sub-menu ⇒ any Circle button (any line type with a width)

Draws filled circles and rings.

DRAGMODE → Modes menu ⇒ Cursor Entity Drag setting

Controls the way dragged objects are displayed.

DRAWORDER → no menu

Changes the display order of images and other objects. In ARRIS, the mnemonic *dpeb* will display objects in the reverse order in which they were drawn.

DSVIEWER → no equivalent command

Opens the Aerial View window.

DTEXT → Text sub-menu ⇒ 1-point Paragraph

Draws text items dynamically.

DVIEW → View menu ⇒ Perspective or Oblique view button

Dynamically defines axonometric or perspective views.

DXBIN → no equivalent command

ARRIS doesn't support the DXB file format.

DXFIN → Expert Translator menu ⇒ DXF2ARRIS mode

Loads a drawing interchange file.

DXFOUT → Expert Translator menu ⇒ ARRIS2DXF mode

Writes a drawing interchange file.

EDGE → Edit menu ⇒ Triangles and Slabs ⇒ Change Edge Display

Changes the visibility of three-dimensional face edges.

EDGESURF → no equivalent command

Constructs a three-dimensional polygon mesh from four adjoining edges.

ELEV

Sets elevation and thickness of new objects.

elevation → Work Plane menu ⇒ Set Z Value ⇒ Absolute or Relative

thickness → no equivalent command

ELLIPSE → Circle sub-menu ⇒ Full Ellipse -or- Partial Ellipse

Draws ellipses using any of several specifications.

END → Projects menu ⇒ EXIT ARRIS button

In AutoCAD the END command saves the drawing and exits AutoCAD. With ARRIS, you must use the SAVE command to save your drawing. If you have unsaved changes, ARRIS will warn you with the prompt "Lose all changes and exit?"

ERASE → Edit menu ⇒ Erase button

Removes objects from a drawing.

EXPLODE → Edit menu ⇒ Freeze button

Breaks a compound object into its component objects.

EXTEND → Line/Curve Tools menu ⇒ Trim/Extend button

Extends an object to meet another object.

EXTRUDE → Extrusion/Rotation pop-up ⇒ Extrude Single or Extrude Area

Creates unique solid primitives by extruding existing two-dimensional objects.

FILES → no equivalent command

List, Delete, Copy, Unlock, or Rename a file.

FILL → no equivalent command

Controls the filling of multilines, traces, solids, solid-fill hatches, and wide polylines. With ARRIS, fill mode can not be turned off.

FILLET → Line/Curve Tools menu ⇒ Fillet button

Rounds and fillets the edges of objects.

FILTER → Edit menu & Copy menu ⇒ Entity Filter section

Creates lists to select objects based on properties

GIFIN → no equivalent command

This imports a GIF-format raster-image file. ARRIS can import BMP-format raster-image files.

GRAPHSCR → no equivalent command

Switches from the text window to the graphics area.

GRID → Screen Modes menu ⇒ Dot Grid buttons

Displays a dot grid

GROUP → no equivalent command

Creates a named selection set of objects. In AutoCAD, the GROUP command creates a named selection set of objects. With ARRIS, the Select Group Search method, on the Edit and the Copy menus, creates a temporary selection set that is only available for a single edit or copy.

HATCH → Pattern sub-menu

In AutoCAD, the HATCH command fills the specified hatch boundary with a nonassociative hatch. With ARRIS, all patterns are associative.

HATCHEDIT → Edit menu ⇒ Crosshatch ⇒ Change Pattern

Modifies an existing hatch object.

HELP → Query ⇒ ARRIS ON-LINE HELP button.

Displays online help. Pressing the middle mouse button (or the F2 key) while the cursor is over a menu button will also access the ARRIS quick-help feature.

HIDE → [ARRIS 3D plug-in] there is an extensive array of hidden line functions.

Regenerates a three-dimensional model with hidden lines suppressed.

ID → Query menu ⇒ Measure XYZ button.

Displays the coordinate values of a location.

INSERT → Repeated Item sub-menu ⇒ Place Single RI button

Places a named block or drawing into the current drawing.

INSERTOBJ → no equivalent command

Inserts a linked or embedded object. ARRIS does not support the Windows feature object linking and embedding (OLE).

INTERFERE → no equivalent command

Creates a composite solid from the interference of two or more solids.

INTERSECT → no equivalent command

Creates composite solid from the intersection of two or more solids.

ISOPLANE → no equivalent command

Specifies the current isometric plane. In AutoCAD, the isometric plane affects the cursor movement keys when Snap mode is on and the Snap style is isometric. ARRIS doesn't have an isometric snap mode.

LAYER → Layer Tools menu

Manages layers.

? → Layer Tools ⇒ Status

Make → Layer Tools ⇒ New (doesn't make it the work (current) layer)
Set → Layer Tools ⇒ Work
New → Layer Tools ⇒ New
On → Layer Tools ⇒ On
OFF → Layer Tools ⇒ Off
Color → Layer Modes menu, ⇒ Defaults
Ltype → ARRIS doesn't assign default line types to layers
Freeze → no equivalent command
Thaw → no equivalent command
Lock → Layer Modes menu ⇒ turn Edit (E) off.
Unlock → Layer Modes menu ⇒ turn Edit (E) on.

LEADER → Text sub-menu ⇒ Paragraph w/ Leader -or- Dimension sub-menu, Dimension Leader

Creates a line that connects annotation to a feature.

LENGTHEN → Line/Curve tools menu ⇒ Trim or Extend a Distance

Lengthens an object.

LIGHT → [ARRIS 3D plug-in] Lights

Manages lights and lighting effects.

LIMITS → Project Setup and Tools menu ⇒ Extents

Sets and controls the available drawing boundaries.

LINE → Line sub-menu ⇒ Continuous Line button

Creates straight line segments

LINETYPE → Line/Curve setup menu

Creates, loads, and sets linetypes.

LIST → Query menu

Displays database information for selected objects.

LOAD → no equivalent command

Makes shapes available for use by the SHAPE command.

LOGFILEOFF → no equivalent command

Closes the log file opened by LOGFILEON.

LOGFILEON → no equivalent command

Writes the text window contents to a file.

LTSCALE → no Command, this is handled by the current workspace scale

Sets the linetype scale factor. AutoCAD uses LTSCALE to change the relative length of dashes in dashed linetypes. ARRIS adjusts the length of the dashes by the scale assigned to the drawing.

MAKEPREVIEW → no equivalent command

Makes a preview image of the current drawing.

MASSPROP → no equivalent command

Calculates the mass properties of regions or solids.

MATLIB → no equivalent command

Imports and exports materials to and from a materials library for rendering.

MEASURE → Line/Curve Tools menu ⇒ Affix button

In AutoCAD, this places points or blocks at measured intervals on an object. With ARRIS this places symbols.

MENU → Plug-in Modules menu

Loads a menu file

MENULOAD → Plug-in Modules menu

Loads a partial menu file.

MENUUNLOAD → Plug-in Modules menu

Unloads a partial menu file.

MINSERT → Repeated Item sub-menu ⇒ Rectangular Array button

Inserts multiple instances of a block in a rectangular array. In AutoCAD, blocks inserted using MINSERT cannot be modified or exploded. With ARRIS they are placed as individual occurrences of the RI, and can be modified or frozen (exploded).

MIRROR → Copy menu ⇒ Mirror X or Mirror Y button

Creates a mirror image copy of objects.

MIRROR3D → Copy menu ⇒ Mirror X or Mirror Y button

Creates a mirror image of objects about a plane.

MLEDIT → Wall Cleanup pop-up

Edits multiple parallel lines. The ARRIS equivalent to AutoCADs "multi-line" is a "wall". The only option this AutoCAD command has that is not available in ARRIS is "Cut Single", which cuts a gap in one element of a multi-line.

MLINE → Walls sub-menu

Creates multiple parallel lines.

MLSTYLE → [ARRIS Architect plug-in] You can create custom Wall types.

Defines a style for multiple parallel lines.

MOVE → Edit menu ⇒ Move -or- Move Relative

Displaces objects a specified distance in a specified direction.

MSLIDE → Display menu ⇒ Save Image file

This saves a raster image file.

MSPACE → Viewport Layout menu ⇒ Select Viewport for work

Switches from sheet mode (paper space in AutoCAD) to a model mode viewport. ARRIS also provides the option to work in a viewport in Full Screen mode.

MTEXT → Text sub-menu ⇒ 2-Point Paragraph

Creates multi-line text.

MTPROP → Edit menu ⇒ Text ⇒ Area In ⇒ All -or- Some

Edits multi-line text properties.

MULTIPLE → All ARRIS graphic commands repeat until aborted or until another command is selected

Repeats the next command until canceled.

MVIEW → Viewport Layout menu ⇒ Create -or- Place File

In AutoCAD, this creates floating viewports. With ARRIS this creates a viewport or places a pre-defined viewport. You can only place or create a viewport on a *sheet mode* layer.

MVSETUP → NEW menu ⇒ Sheet -and- Sheet Info / Title Block Layout -and- Viewport Layout menu

In AutoCAD, this is like a wizard for setting up the specifications of a drawing. With ARRIS, you create a sheet from a standard sheet template, and place viewports individually onto the sheet.

NEW → NEW menu ⇒ Project Directory -or- Database -or- Drawing -or- Sheet

In AutoCAD, this creates a new drawing. In ARRIS, a drawing is part of a database, which is part of a project. A drawing contains only *model mode* layers (model space in AutoCAD). *Sheet mode* layers are only in sheets (paper space in AutoCAD). You can create any combination of model mode layers from anywhere in the project directory and display them in viewports placed on sheet mode layers.

OFFSET → Line/Curve Tools ⇒ Offset -or- Chase with Offset

Creates concentric circles, parallel lines, and parallel curves.

OLELINKS → no equivalent command

Updates, changes, and cancels existing OLE links.

OOPS → Undo/Redo button

Restores erased objects. In ARRIS, the *undo/redo* feature allows you to move backwards and forwards through a drawing by specifying the number of *undo/redo* steps.

OPEN → Projects menu ⇒ Open Drawing -or- Open Sheet

Opens an existing drawing file.

ORTHO → Status menu ⇒ XYF on/off

Constrains cursor movement to the X and Y-axes.

OSNAP → Object Snap menu

Sets object snap modes.

PAN → Zoom and Pan menu ⇒ 2 pt Pan

Moves the drawing display in the current viewport.

PASTECLIP → no equivalent command

Inserts data from the Clipboard.

PASTESPEC → no equivalent command

Inserts data from the Clipboard and controls the format of the data.

PEDIT → no equivalent command

Edits polylines and three-dimensional polygon meshes.

PFACE → no equivalent command

Created a 3D polyface mesh.

PLAN → View menu ⇒ Plan button

Displays the plan view of a user coordinate system.

PLINE → no menu

Creates two-dimensional polylines. The *mn_2dpoly* command was included in ARRIS 7.0 for translation compatibility reasons. There command in not on the menu.

PLOT → Plot menu

Plots a drawing to a plotter, printer, or file.

POINT → no menu

Creates a point object. ARRIS symbols are equivalent to AutoCAD points. You can use the ARRIS mnemonic commands 'sym' to set the symbol number, 'ssp' to set the symbol scale and rotation and 'ssy' to place a symbol.

POLYGON → Circle sub-menu ⇒ Polygon button

Creates an equilateral closed polyline.

PREFERENCES

Customizes the AutoCAD settings.

System

Screen Menu → no equivalent command

Scroll Bars → Modes menu ⇒ Window slide bars

Window Repair → no equivalent command

Automatic Save → Modes menu ⇒ Autosave

Digitizer Input → Tablet Setup menu

Font → no equivalent command

Color → Define Colors menu

Environment → See the ARRIS technical reference manual

Render → no equivalent command

International → Project Setup and Tools menu

Prototype Drawing → Drawings use 'noname.db' | Sheets use Sheet template files
Misc → See the ARRIS technical reference manual

PSDRAG → no equivalent command

Controls the appearance of a PostScript image as it is dragged into position with PSIN.

PSFILL → no equivalent command

Fills a two-dimensional polyline outline with a PostScript pattern.

PSIN → no equivalent command

Imports a PostScript file.

PSOUT → no equivalent command

Creates an Encapsulated PostScript file.

PSPACE → **Modify Viewport menu** ⇒ **Return to Sheet button**

In AutoCAD, this switches from a model space viewport to paper space. With ARRIS, this switches from working on model mode layers in a viewport to working on the sheet mode layers that contain the viewport.

PURGE → **Layer Tools menu** ⇒ **Pack Data button**

In AutoCAD, PURGE removes unused named objects from the drawing file. These can be Blocks, Dimstyles, Layers, Linetypes, Shapes, Styles, Appids, Mlinestyles or All. PURGE removes only one level of reference. Repeated use of PURGE is necessary until there are no unreferenced objects.

In ARRIS, the Pack command removes all unreferenced points.

QSAVE → **Save Menu** ⇒ **Save**

Saves the current drawing.

QTEXT → **Text setup menu** ⇒ **Box Text setting**

Controls the display and plotting of text and attribute objects.

QUIT → **Projects menu** ⇒ **EXIT ARRIS button**

Exits AutoCAD. If you have unsaved changes, ARRIS will warn you with the prompt "Lose all changes and exit?"

RAY → no menu

Creates a semi-infinite line. The *mn_ray* command was included in ARRIS 7.0 for translation compatibility reasons.

RCONFIG → no equivalent command

To reconfigure the rendering setup.

RECOVER → **Similar commands: Autosave and Pack Database**

Repairs a damaged drawing.

RECTANG → Line sub-menu ⇒ Rectangle button

The AutoCAD rectangle command creates a rectangular polyline. The ARRIS rectangle command creates a rectangle from 4 separate line segments.

REDEFINE → no equivalent command

Restores AutoCAD's internal commands.

REDO → Redo button

Reverses the effects of the previous UNDO command.

REDRAW → Display menu ⇒ Redraw button

Refreshes the display of the current viewport.

REDRAWALL → Display menu ⇒ Redraw All Viewports button

Refreshes the display of the drawing.

REGEN → Layer Tools menu ⇒ Display List button

Regenerates the drawing and refreshes the current drawing.

REGENALL → Layer Tools menu ⇒ Display List button

Regenerates the drawing and refreshes all viewports.

REGENAUTO → no equivalent command

Controls automatic regeneration of a drawing. ARRIS never does an automatic regeneration of the display list, except when you load a layer that does not have a display list file with it.

REGION → no equivalent command

Creates a region object from a selection set of existing objects.

REINIT → no equivalent command

Reinitializes I/O devices and program parameter files.

RENAME → Similar: Line, Circle, Text or Dimension Style Rename

Rename one or more Block, Dimstyle, Layer, Linetype, Text Style, Ucs, View or Viewport.

RENDER → Display menu ⇒ Shade button

Creates a realistically shaded image of a three-dimensional wireframe or solid model. ARRIS shade command produces results more nearly like AutoCAD's Render than to AutoCAD's Shade. However, AutoCAD's render program has more lighting and material options than ARRIS's shade command.

REPLAY → no equivalent command

Displays a BMP, TGA, or TIFF image.

RESUME → no equivalent command

Continues an interrupted script.

REVOLVE → Extrusion/Rotation menu ⇒ Rotate Single -or- Rotate Area

Creates a solid by revolving a two-dimensional object about an axis. In AutoCAD, you can only revolve one entity at a time.

REVSURF → Extrusion/Rotation menu ⇒ Rotate Single -or- Rotate Area

Creates a rotated surface about a selected axis.

RMAT → no equivalent command

Manages rendering materials.

ROTATE → Edit menu ⇒ Move Scale & Rotate button

Moves objects about a base point. To rotate only, accept the default value of 1 for scale.

ROTATE3D → Edit menu ⇒ Move Scale & Rotate button

Moves objects about a three-dimensional axis. To rotate around the X, Y and/or Z axis, enter the angles in this format x,y,z. Example: to rotate 45 degrees around the X axis enter 45,0,0.

RPREF → no equivalent command

Sets rendering preferences.

RSCRIPT → no equivalent command

Used in a script file to repeat the script.

RULESURF → no equivalent command

Creates a ruled surface between two curves.

SAVE → Save Menu ⇒ Save

Saves the drawing under the current file name.

SAVEAS → Save Menu ⇒ Save As

Saves an unnamed drawing with a file name or renames the current drawing.

SAVEASR12 → Save Menu ⇒ Export As

You can use this to create an AutoCAD r12 DWG file.

SAVEIMG → [ARRIS 3D plug-in] Export Image menu

Saves a rendered image to a file. ARRIS can save a TGA or BMP format image file.

SCALE → Edit menu ⇒ Move Scale & Rotate button

Enlarges or reduces selected objects equally in the X, Y, and Z directions. To scale only, accept the default value of '0' for rotation. AutoCAD can scale equally in the X and Y directions. With ARRIS you can specify a different scale in the X Y and/or Z-axes.

SCENE → no equivalent command

Saves a named view with selected lights.

SCRIPT → no menu

The \$flin('filename') executes a series of commands from a file. Enter \$flin('xxx') where xxx is the name of the file. Example: If you create a text file named test.txt that contains a series of Commands, enter \$flin('test.txt') at the prompt line to run those commands. The ARRIS \$flin() command must be typed in at the prompt line. There is no menu box for this command.

SECTION → Section Generator menu

Uses the intersection of a plane and solids to create a region.

SELECT → no equivalent command

Places objects in the Previous selection set.

SETVAR → no menu

Lists or changes the values of system variables. In ARRIS, you would use the *cfg* (change flag) command. ARRIS flags are like AutoCAD system variables. The ARRIS *cfg* command must be typed in at the prompt line. There is no menu box for this command.

SHADE → Display menu ⇒ Shade button

Displays a flat-shaded image of the drawing in the current viewport. The results of the ARRIS *shade* feature are more nearly like those obtained by AutoCAD's *render* command.

SHAPE → no equivalent command

Inserts a shape that is contained in a loaded shape file.

SHELL → no menu

Accesses operating system commands. The ARRIS \$scall1('command') \$utility must be typed in at the prompt line. There is no menu box for this command.

SKETCH → Line sub-menu ⇒ Freehand Line button

Creates a series of freehand line segments.

SLICE → Section Generator menu

Slices a set of solids with a plane.

SNAP → Screen Modes Menu ⇒ Snap Round button

Restricts cursor movement to specified intervals.

SOLID → no equivalent command

Creates solid-filled polygons. In AutoCAD these only appear solid filled if in plan view and if fill mode is on. In ARRIS, you can use a solid fill pattern to achieve this effect. However the areas will appear filled in any view. You can also draw a slab which can be shaded.

SPELL → no equivalent command

Checks spelling in a drawing.

SPHERE → Solids sub-menu ⇒ Sphere button

Creates a three-dimensional solid sphere.

SPLINE → Line sub-menu ⇒ Spline line button

Creates a quadratic or cubic spline (NURBS) curve.

SPLINEDIT → Edit ⇒ Move At Single Point

Edits a spline line.

STATS → no equivalent command

Displays rendering statistics.

STATUS → Status menu

Displays drawing statistics, modes, and extents.

STLOUT → no equivalent command

Stores a solid into an ASCII or binary (.STL) file.

STRETCH → Edit menu ⇒ Stretch -or- Stretch Relative button

Moves or stretches objects.

STYLE → Text Setup menu ⇒ Make Style button

Creates named text styles. In AutoCAD a named text style is associated with each text object in the drawing. In ARRIS, a text style is simply a set of text settings that can be retrieved by name. Text entities in ARRIS do not have a named text style associated with them.

SUBTRACT → no equivalent command

Creates a composite region or solid by subtraction.

SYSWINDOWS → no equivalent command

Arranges windows.

TABLET → Tablet Setup menu

Calibrates, configures, and turns on and off an attached digitizing tablet.

TABSURF → Extrusion/Rotation menu ⇒ Extrude Area

Creates a tabulated surface from a path curve and a direction vector.

TBCONFIG → Quick Help menu ⇒ Chevron button [to place the selected button on the toolbar]

In AutoCAD, this is for customizing toolbars.

TEXT → Text sub-menu ⇒ Place Single Text button

Creates a single line of text.

TEXTSCR → no equivalent command

Opens the AutoCAD text window.

3D → Solids sub-menu

Construction tools for a variety of 3D objects:

Box → Solids sub-menu ⇒ Cube button
Cone → Solids sub-menu ⇒ Cone button
Dish → no equivalent command
Dome → Solids sub-menu, Dome button
Mesh → no equivalent command
Pyramid → Solids sub-menu ⇒ Pyramid button
Sphere → Solids sub-menu ⇒ Sphere button
Torus → no equivalent command
Wedge → Solids sub-menu ⇒ Shed Roof button

3DARRAY → no equivalent command

Creates a three-dimensional array. In ARRIS, you will have to use the array edit command twice.

3DFACE → Slab/Path sub-menu ⇒ Polygonal Surface button

Creates a three-dimensional face.

3DMESH → no menu

Creates a free-form polygon mesh. The `mn_3dmesh` command was included in ARRIS 7.0 for translation compatibility reasons. None of the snap or edit functions currently recognize the entities this command creates. The ARRIS `mn_3dmesh` command must be typed in at the prompt line. There is no menu box for this command.

3DPOLY → no menu

Creates a polyline of straight line segments in three-dimensional space. The `mn_3dpoly` command was included in ARRIS 7.0 for translation compatibility reasons. None of the snap or edit functions currently recognize the lines this command creates. The ARRIS `mn_3dpoly` command must be typed in at the prompt line. There is no menu box for this command.

3DSIN → no equivalent command

Imports a 3D Studio file.

3DSOUT → no equivalent command

Exports a 3D Studio file.

TIFFIN → no equivalent command

Imports a TIFF format image file.

TIME → Query menu ⇒ Status menu ⇒ Preferences

Displays the date and time statistics of a drawing. The last line of the Preferences menu shows the elapsed time, in minutes that you have spent editing the current sheet or drawing. This feature is used in conjunction with the *acct* (accounting mode) command.

TOLERANCE → Dimension Status line ⇒ Tol Mode setting

Creates geometric tolerances.

TOOLBAR → no equivalent command

Displays and moves toolbars.

TORUS → no equivalent command

Creates a donut-shaped solid. In ARRIS, you can generate a torus by first drawing a circle and then from the Slab/Path sub-menu, select the Extrude Tube Along a Path button, Place your cursor near the circle and press F4 to trace the path. Set the tube diameter and tube sides on the status line. The Circle Display Sides setting on the Modes menu will effect the smoothness of the circle trace.

TRACE → Line/Curve Setup menu ⇒ select a Solid Fill line (type f)

Creates solid lines. The AutoCAD trace is actually a solid filled area defined by four sides. The ARRIS filled line type is a single line with width, defined by its 2 end points. ARRIS has no fill mode, so the solid fill line type is always displayed solid, never in outline.

TREESTAT → no equivalent command

This displays information about the drawings spatial index.

TRIM → Line/Curve Tools menu ⇒ TR/EX button

Trims objects at a cutting edge defined by other objects.

U → Main menu ⇒ Undo button

Reverses the most recent operation. The ARRIS *undo* function only effects graphical changes. It does not undo display or setup commands.

UCS → Work Plane menu

Manages user coordinate systems.

UCSICON → no equivalent command

Controls the visibility and placement of the UCS icon. In ARRIS you can't turn on an axis display icon that remains on screen. However, a work plane cursor will indicate the current axis directions. If you need to see the current work plane, select Show Workplane on the Work Plane menu.

UNDEFINE → not required

Allows an application-defined command to override an internal AutoCAD command. Normally used to enable a user-defined command with the same name.

UNDO → Main menu ⇒ Undo button

Reverses the effect of commands. The ARRIS *undo* function only effects graphical changes. It does not undo display or setup commands. The number of undo steps is set on the Undo menu.

UNION → no equivalent command

Creates a composite region or solid.

UNITS → Project Setup and Tools pop-up ⇒ Input Units and Output units

Sets coordinate and angle display formats and precision. In ARRIS, angle information can not be set. It is always the same as the AutoCAD default. Angles are in degrees and decimals of a degree. Zero angle is east, and positive rotation is counterclockwise.

VIEW → View menu ⇒ View Files section

Saves and restores named views.

VIEWRES → Modes menu, Circle Display sides

Sets the resolution for object generation in the current viewport. ARRIS never does automatic regens, so there is no need for the "fast zooms" portion of this command. ARRIS always displays circles to appear smooth while in plan view, the Circle display sides determines the appearance of circles in other views, as well as how they will appear when *frozen* (exploded) and how closely they will be traced when boundary chased.

VLCONV → no equivalent command

Visual link data conversion

VPLAYER → not required

Sets layer visibility within viewports. With ARRIS, you can select any viewport to work (current) when you have a sheet open. While working in that viewport, you can turn various layers on or off with the layer modes menu. Simply selecting the Use Current Layer Modes button on the Modify Viewport menu before returning to the sheet will set the layer visibility for that viewport.

VPOINT → View Menu ⇒ View Rotation Angles button

Sets the viewing direction for a three-dimensional visualization of the drawing.

VPORTS → Winports menu

Divides the graphics area into multiple tiled viewports. In ARRIS these are called winports.

VSLIDE → Display menu ⇒ Load Image file

Displays a raster image slide file in the current viewport.

WBLOCK → no equivalent command

Writes objects to a new drawing file.

WEDGE → Solids sub-menu ⇒ Shed Roof button

Creates a 3D solid with a sloped face tapering along the X axis.

WMFIN → no equivalent command

Imports a Windows Metafile.

WMFOPTS → no equivalent command

Sets options for WMFIN.

WMFOUT → no equivalent command

Saves objects to a Windows metafile.

XATTACH → [ARRIS Facilities Management plug-in] Link to File option

Attaches an external reference to the current drawing.

XBIND → not required

Binds dependent symbols of an xref to a drawing.

XCLIP → no equivalent command

Defines an xref clipping boundary and sets the front or back clipping planes

XLINE → no menu

Creates an infinite line. The *mn_xline* command was included in ARRIS 7.0 for translation compatibility reasons. None of the snap or edit functions currently recognize the lines this command creates. The ARRIS *mn_xline* command must be typed in at the prompt line. There is no menu box for this command.

XPLODE → Edit menu ⇒ Freeze button

Breaks a compound object into its component objects.

XREF → no equivalent command

Controls external references to drawing files. Changes made to the externally-referenced drawings are reflected in your current drawing.

In ARRIS, each layer is a separate file that can belong to any number of drawings. You can use the Layer Modes menu to load a layer that is anywhere in any database directory within your current project directory. Any changes made to a layer are reflected in all drawings that reference that layer.

XREFCLIP → Viewports Layout menu ⇒ Place File button

In AutoCAD, this creates a floating viewport in paper space, sizes it, and inserts an Xref into it. In ARRIS, this places a viewport on a sheet that was previously defined to contain certain layers from another drawing. The size of the viewport and scale of the drawing inside the viewport were also previously defined.

ZOOM

Increases or decreases the apparent size of objects in the current viewport. In AutoCAD, you can't use ZOOM "transparently" (nested) while in paper space. With ARRIS you can interrupt any command with a zoom command.

- All → no equivalent command. In AutoCAD, this displays all of the entities but never displays an area smaller than the "Limits". The *limits* in AutoCAD would be the *extents* in ARRIS.

- Center (at current magnification) → default Mouse MCI menu ⇒ Move View

- Dynamic → no equivalent command

- Extents → Zoom and Pan menu ⇒ Zoom All button

- Left → no equivalent command

- Previous → Zoom and Pan menu ⇒ Zoom Previous button

- Vmax → not required, use Zoom All button (ARRIS never forces a REGEN)

- Window → Zoom and Pan menu ⇒ Zoom Window button

- Scale(X/XP) → no equivalent command ⇒ use Zoom In or Zoom Out button