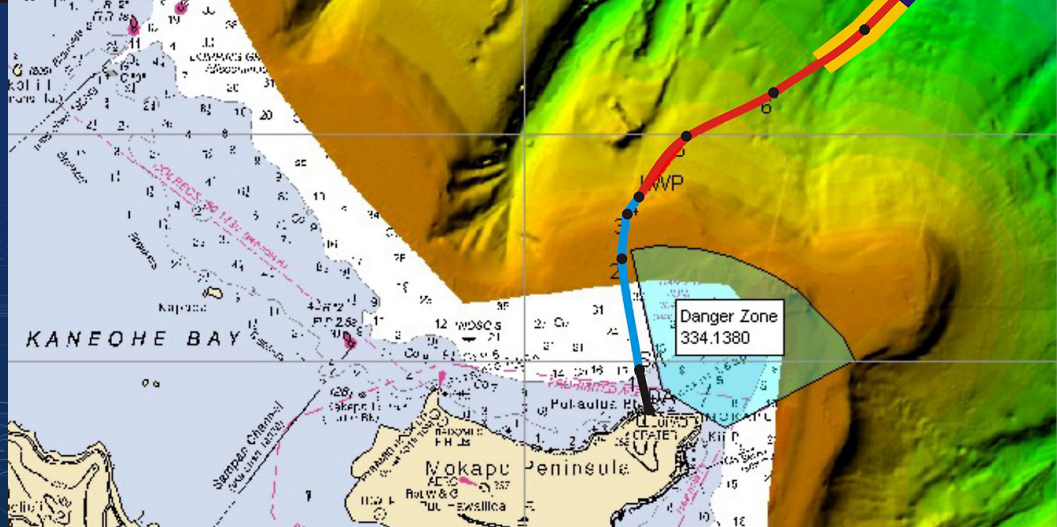
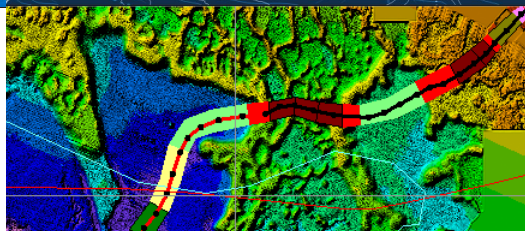
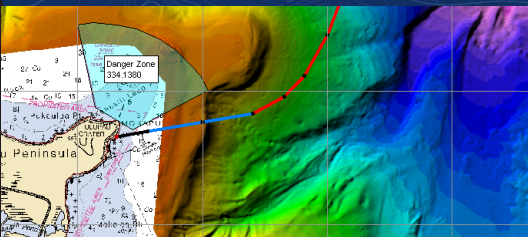


MakaiPlan Submarine Cable Planning Software



MakaiPlan is a software product (WinXP, 7, 8) which can be used to create submarine cable routes, define cables and in-line bodies, edit routes, define and adjust slack, instantly create an RPL and SLD, estimate costs and plan the installation of a submarine cable along the route. MakaiPlan allows multiple planners and designers to interactively work on cable installations with easy access to and exchange of project data. MakaiPlan works on your PC in Windows. If you know how to use other Windows programs and are familiar with cable planning, you already know 90% of what is needed to plan a cable route with MakaiPlan.

MakaiPlan has been created by Makai Ocean Engineering, the company that introduced 3D dynamic submarine cable laying control to the industry and has developed the most complete and accurate programs available today for controlling and simulating submarine cable laying. MakaiPlan has become the standard software for submarine cable route planning with over 250 licenses sold.



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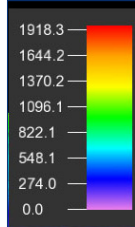
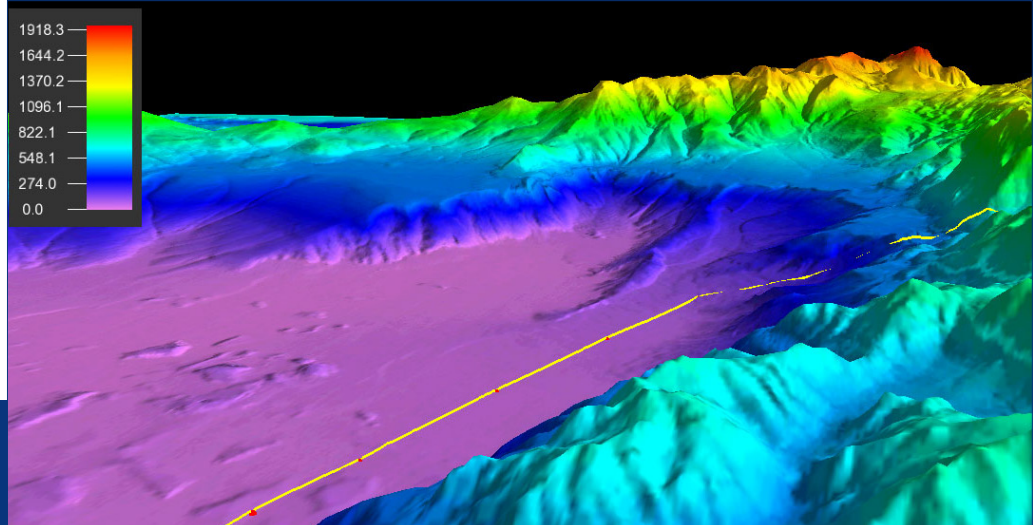
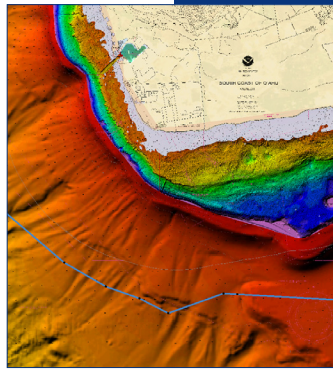
THE POWER OF GIS

MakaiPlan works with a modern GIS (geographic information system) to provide access to databases for bathymetry, shorelines, soils, existing cables, survey data, navigational charts, and other geographically distributed data. MakaiPlan uses tools from GeoMedia by Intergraph, has an open file structure, and can access a variety of standard GIS databases. MakaiPlan can also import and properly translate data from other GIS databases in a variety of formats, projections and datums.

ROUTE DEFINITION

With MakaiPlan, you start with a map of the world. You define your region of operation and you import available information. MakaiPlan allows you to enter regional shoreline and bathymetric data (global bathymetric data and shorelines are included with MakaiPlan). You can create cable routes via point and drag, by entering precise coordinate points, by reading an existing RPL or by letting MakaiPlan automatically position a great circle route in a series of Rhumb lines. All computations and Kp route distances are accurately computed and displayed. The route can consist of any number of A/C points, as well as buried sections and special events. Slack is part of the route definition and both bottom and surface slack are shown.

R-03	60000	R-04	60000	R-05	19510	P.D.(SAL)	40490
170000	LW	230000	LW	290000	LW	309510	SAL



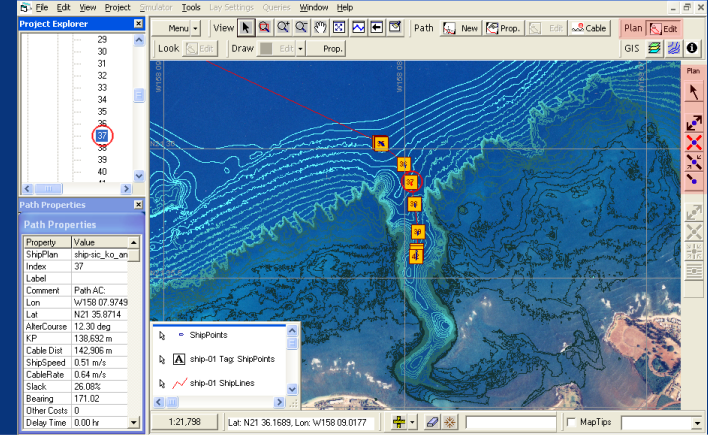
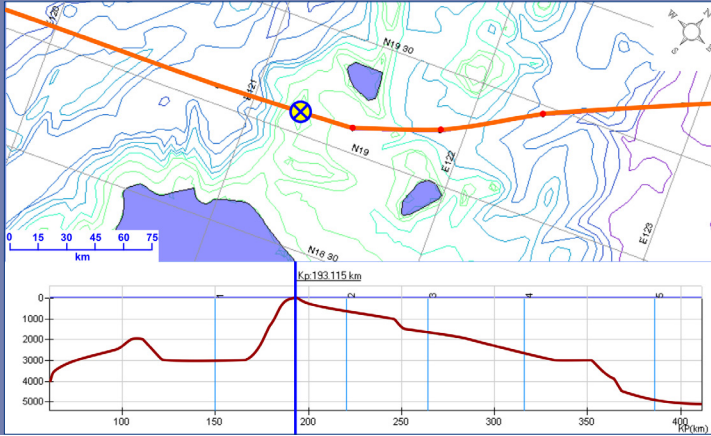
with MakaiDTM option

DEFINE YOUR CABLE

The user can define the cable with cable types, transition points, and any user defined cable body. The cable types, repeaters, splices, and other cable bodies are precisely located along the route accounting for proper distribution of cable slack. Adjustments can be easily made to properly configure the cable. MakaiPlan works in two different modes. Flex mode (during initial route planning) allows you

to alter the cable length to achieve particular bottom slack conditions. Fixed mode (after cable is manufactured) allows you to fix the cable length so that any changes in the cable parameters will change the slack rather than the cable length.

MakaiPlan creates an SLD which can be displayed, printed or exported into other Windows programs.



INSTANT PROFILES

MakaiPlan immediately computes the bottom profile along the selected route based on either contour or point data. Profiles are displayed and slopes are computed.

By zooming and panning along the route in both the plan and profile views, an optimal route can be easily found. Dual locators link the two views so that problems and solutions can be easily identified and quickly resolved.

FAST AND ACCURATE RPL

You can instantly complete a detailed and accurate RPL which can be edited, exported, reversed or split into separate cable lays.

INSTALLATION

Installation cost estimates can be compiled by MakaiPlan from input such as ship costs, laying speeds, special events, burial costs and cable costs.

Cable laying speeds can be defined and cable deployment angles are computed and displayed for comparison to the bottom slope.

Slack adjustments are easily made to the RPL to account for the final as-loaded cable configuration. Varying ship speed, changing lay direction, and cutting the RPL into several lay segments are easily accomplished with MakaiPlan.

cable lay direction or speed), the route and cable can be quickly and accurately edited to accommodate the needed changes. As a result, the plan is interactively created and modified based on the latest available information.

RPL Bottom		Options													
Index	Auto Label	Label	Latitude	Longitude	Bearing deg T	AltCourse deg	Distance (m) Segment	Distance (m) Total	Slack %	Cable (m) Surface	Cable (m) Bottom	Cable Type	Body Type	Depth m	Comment
242		SAL / LWP	N13 02 0900	W083 42 5940	266.862	-0.03	11.086	3,859.537	3.00	2.74	11.418	SAL		3,763.789	
243		LWP / LW	N13 01 8700	W083 45 9340	266.884	-0.03	6.047	3,865.584	3.00	2.78	6.229	LWP		3,776.018	LWP / LW
244		REP-268	N13 00 8470	W084 04 7440	266.925	-0.06	34.059	3,899.643	3.00	2.97	35.081	LW		3,811.099	
245		Columbus 0	N13 00 7020	W084 07 3640	266.770	-0.02	4.745	3,704.388	2.99	4.887	3,815.986	LW	REP-1 F	2.980	Columbus 0
246		Americas-2	N13 00 2670	W084 15 2130	266.745	-0.02	14.213	3,718.601	3.00	14.640	3,830.626	LW		3,175	Americas-2
247		AC310	N13 00 0000	W084 20 0000	248.370	-0.02	25.490	3,727.271	3.00	26.255	3,839.995	LW		3,215	
248		REP-267	N12 54 9040	W084 33 1030	248.345	-0.02	1	3,752.761	2.99	1	3,865.811	LW		3,286	
		REP-267	N12 54 9039	W084 33 1034	248.345	-0.02	1	3,752.762	2.99	1	3,865.811	LW	REP-1 F	3,286	
249		REP-356	N12 44 2730	W085 00 3890	248.132	0.21	53.117	3,806.879	2.99	54.711	3,920.522	LW		4,063	
		REP-356	N12 44 2730	W085 00 3904	248.132	0.21	1	3,806.880	2.99	1	3,920.522	LW	REP-1 F	4,063	
250			N12 40 3295	W085 10 3968	248.131		19.520	3,825.400	2.95	20.165	3,940.628	LW		4,677	
251			N12 38 5050	W085 15 0260	248.131		9.031	3,834.431	2.99	9.303	3,949.351	LW		4,779	

EDITING

The real power of MakaiPlan is the ease of editing the cable and route information as conditions change throughout the planning and installation process. Editing a route is easily performed by point and drag or precise reentry of data.

As additional information is added to the GIS database (final bathymetric survey, as-loaded cable,

3D BATHYMETRY

Using the Makai Digital Terrain Modeling (DTM) software, MakaiPlan allows you to accurately process and visualize large amounts of point data collected along an entire surveyed area in order to identify any potential hazards for plowing or surface lay operations. The new module allows you to load, process and edit the survey point (x,y,z) data, create grid files using a variety of methods, create user definable contour colored and shaded relief maps, superimpose the RPL on any of the created maps and quickly generate accurate slope graphs along and across any desired route section. All the maps created can be automatically georeferenced as GeoTIFFs and viewable as layers on the main MakaiPlan GIS window.

MakaiPlan 5.0

Upgrade

MAJOR RELEASE

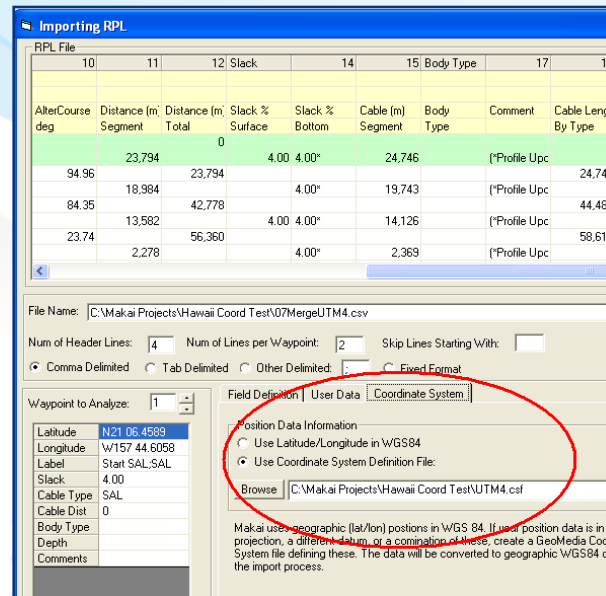
MakaiPlan 5.0 is a major software release in the life cycle of Makai's submarine cable planning software. In response to customer requests, many new features and added functionality have been introduced into this release.

SHOWING PROJECTION X,Y IN RPL

Users can now show X,Y positions in addition to the geographic/WGS84 positions used natively by Makai-Plan. The user-defined coordinate system file can be attached to the options tab of the RPL window.

ALTERNATIVE DATUMS SUPPORTED

Projections and alternative Datums are now supported for importing position data in the RPL Window. After creating a coordinate system file and defining the Position Data Information using the file, users can use the X and Y fields, rather than the Lon and Lat fields.



SHOWING PROJECTION X,Y IN RPL

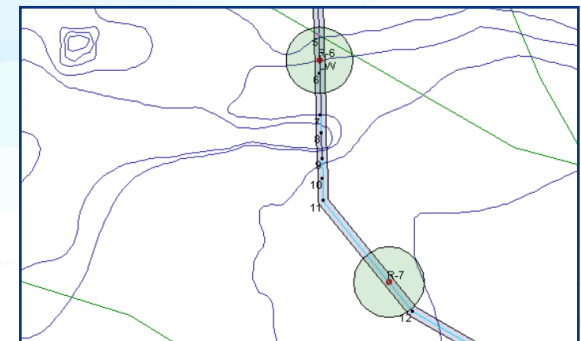
Users can now show X,Y positions in addition to the geographic/WGS84 positions used natively by Makai-Plan. The user-defined coordinate system file can be attached to the options tab of the RPL window.

Bottom RPL: C:\Makai Projects\Hawaii Coord Test\PATH-01.pthmdb

RPL-Bottom						Optic
Index	Latitude	Longitude	X	Y	Cable (m)	
0	N21 14.1512	W157 52.1495	617348.81	2348670.04		Total
1	N21 13.2669	W157 50.3107	620539.63	2347061.62	3,717	
	N21 12.6649	W157 50.0007	621083.97	2345954.91	5,000	
	N21 11.7264	W157 49.5176	621932.62	2344229.69	7,000	
2	N21 11.3906	W157 49.3447	622236.28	2343612.43	7,716	
3	N21 10.5784	W157 47.4709	625489.95	2342138.38	11,431	

BUFFER ZONES

Buffer zones are now supported around path lines, path points, and bodies. These can be defined as fixed width or width as a function of depth (for points and bodies). The buffer zones move as the path is edited and are persistent within the project.



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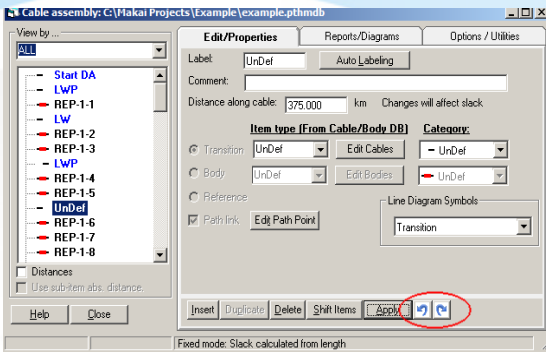


UNDO - REDO

Undo and redo functionality have been added to path edits. There is a new Advanced tab in the project options to define the maximum number of undo's and the location to store the undo data.

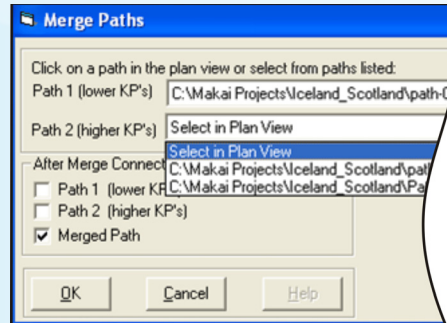


The undo and redo buttons will appear in two places: on the plan view top tool bar in the path section, and in the Cable Assembly form. These two locations have the exact same functionality, it does not matter where the edits were made.



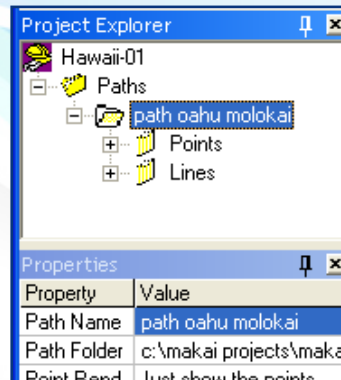
MERGE PATHS TOOL

A new Merge Paths tool allows users to easily merge two paths into a single path either by selecting the paths from the plan view or selecting them from the drop-down list in the tool. After the merge, the user has the option to load and edit the original path or the merged path.



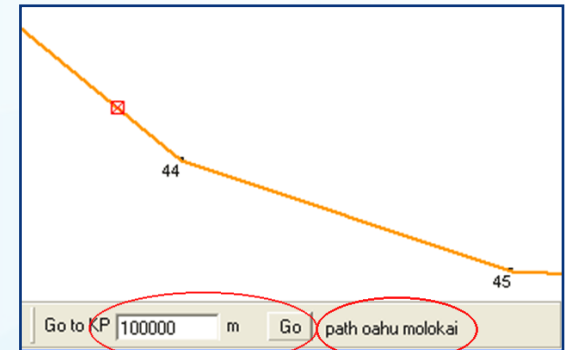
EXPLORER SHORT PATH NAME

The explorer window now displays the short name of the path, not the full file name. A field in the properties window was added to show the folder in which the path file resides.



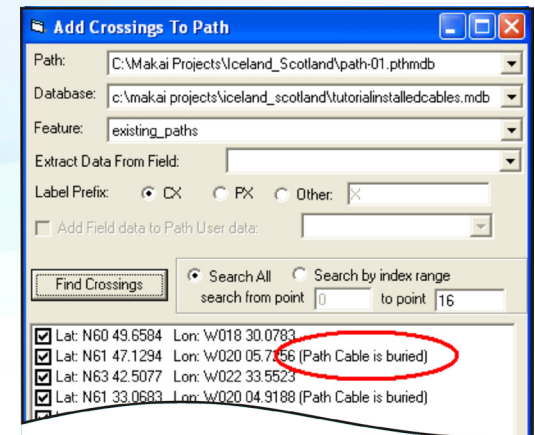
KP MARKERS

The functionality to place a marker on a specific KP or cable distance has been added. The interface is located on the bottom plan view toolbar. A marker is added by first selecting a path, entering the KP value and clicking the "Go" button. The short name of the path being affected is shown to the right.



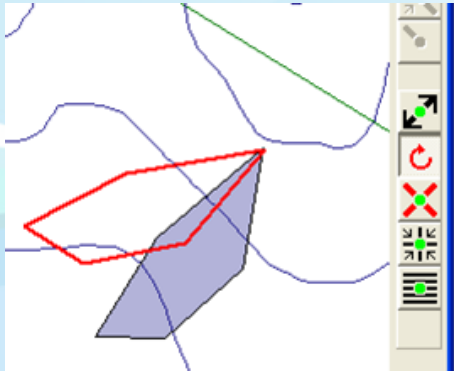
CROSSING TOOL

The "Add Crossings To Path" tool now includes the ability to indicate if the cable is buried at the crossing point.



ROTATION OF ANNOTATIONS

Notes, lines and areas can now be rotated in the plan view by selecting the rotation button and clicking on a geometry object at the rotation center.



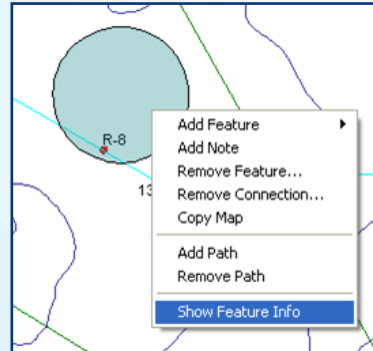
DELETE SELECTABLE POINTS

Users now have the option to delete objects from the selectable point list. A warning will be displayed if any of the objects to be deleted contain altercourses, transitions, or slack change points.

Label	Latitude	Longitude	Comment	
CX 0	N63 42.5077	W022 33.5523	Crossing (Depth= C	Save Changes
CX 0 (Path Cable is	N61 47.1284	W020 05.7256	Crossing (Depth= C	Delete Selected
CX 0 (Path Cable is	N61 33.0683	W020 04.9188	Crossing (Depth= C	
CX 0	N60 43.6584	W018 30.0783	Crossing (Depth= C	Export
CX 0	N59 28.9839	W009 05.7043	Crossing (Depth= C	

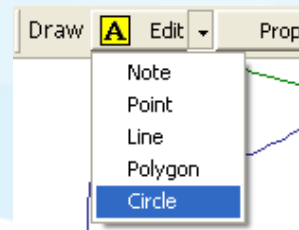
RIGHT-CLICK FEATURE INFO

A "Show Feature Info" option has been added to the right-click menu in the plan view allowing for easy access to feature information.



DRAW CIRCLES

Circles can now be drawn, added and edited to the annotations database.



IMPORT CABLE & BODY PROPERTIES

Cable and body property definitions can now be imported.

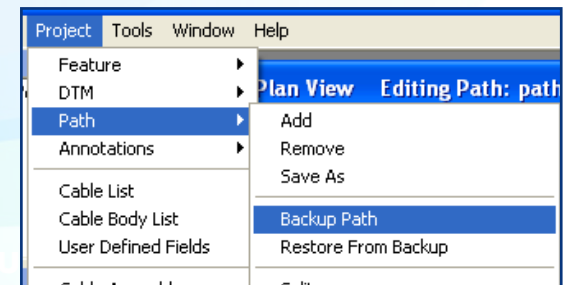
IMPORT CABLE & BODY PROPERTIES

Cable and body property definitions can now be imported.

Import Cable and Body Data			
Select cable types to import into project			
Import	Name	Description	Comment
<input checked="" type="checkbox"/>	SA17	Single Armor	Tyco SL17 Single Armor
<input type="checkbox"/>	SPA17	Special Protection	Tyco SL17 Special Prote
<input type="checkbox"/>	LWA17	Light Wire Armor	Tyco SL17 Light Wire Ar
<input type="checkbox"/>	LW17	Light Weight	Tyco SL17 Lightweight
<input type="checkbox"/>	DAHA17	Double Armor-HA	Tyco SL17 DA-HighAbra
<input checked="" type="checkbox"/>	RA17	Rock Armor	Tyco SL17 Rock Armor
<input type="checkbox"/>	RL	LAND/RL Cable	LAND/RL Cable
<input type="checkbox"/>	FLC	Flying Lead Cable	Flying Lead Cable
Select body types to import into project			
Import	Name	Description	Comment
<input type="checkbox"/>	SCJ-L	SC Joint L	None
<input checked="" type="checkbox"/>	SCJ-A	SC Joint A	None
<input type="checkbox"/>	RPT-LS	LW Repeater Shor	None
<input type="checkbox"/>	RPT-AS	Armored Repeater	None
<input type="checkbox"/>	JNT-L	LW Splice Box	None
<input type="checkbox"/>	JNT-A	Armored Splice Box	None
<input type="checkbox"/>	WMU-L	WMU-L	None

PERFORMANCE INCREASE

A change in how automatic backups are performed results in an increase in performance.



The User Interface (Explorer Window, etc.) now supports upper case characters.

