**OVERVIEW**

Casing, liner, and tubing strings are a significant cost and safety component in all well construction operations. Operators need to be able to determine safe designs that are also cost-effective. StressCheck™ casing-design software takes the trial and error out of designing casing, liner, and tubing strings, and helps minimize the cost of well tubulars.

This comprehensive solution automatically generates the lowest-cost casing design based on user-defined loads. Using interactive graphics-based tools, StressCheck software enables quick, systematic, and accurate evaluation of casing wear limits, minimum-cost design solutions, comprehensive tri-axial design, and working-stress design for burst, collapse, and axial installation and service-life loads. With StressCheck software tools, it’s easy to complete designs using the minimum-cost design algorithm or the “click-and-drag” design element.

StressCheck software is integrated the Engineer’s Data Model™ (EDM™) software, which supports integrated operations reporting, drilling, and completions engineering, and well-planning workflows.

**KEY FEATURES**

- Quickly develop accurate casing design scenarios
- Drag-and-drop casing strings with all the loads and relevant data from one design to another
- Automatically generates lowest cost casing design based on defined loads

**Benefits**

**Higher Productivity and Efficiency**

Integration with the EDM software platform helps reduce data-entry time, errors, and training. Information is entered once and then available to other applications in Landmark’s drilling portfolio. For example, StressCheck has bi-directional integration with WELLCAT™ software and shares fluid densities, cementing and landing data, applicable design parameters, and unidirectional limited integration of burst, collapse, and axial loads, single packer and pipe data, and connections.

StressCheck™ software provides a graphical design limits plot and safety factors for each string.
**Low-cost Design**
StressCheck software helps lower the cost of casing and tubing design. It automatically determines the lowest cost casing design, based on either standard or user-defined inventories, specific cost, user-defined constraints on valid API and tri-axial design domains, and minimum length of casing and tubing sections. Graphics-based workflows streamline the casing, liner, and tubing string design processes, helping to minimize the cost of well tubulars.

**Fast, Accurate Solutions**
Determines fast and accurate load, stress, and buckling solutions for vertical and directional wells.

**FEATURES**

**Powerful EDM Platform Integration**
Built on Landmark’s EDM platform, enabling integrated workflows and features and providing common data navigation with other EDM applications.

**Graphical Designs**
Graphical design tools streamline workflows for casing, liner, and tubing strings design.

**Automated Load Generation**
Running installation and service loads with automated generation of standard or user-defined load cases for drilling and production.

**Compression Ratings and Design Factors**
Determine connection axial compression rating and design factors, and pipe body axial compression design factors separate from the axial tension ratings and design factors. Results provide views to distinguish between axial tension and compression safety factors for both connection and pipe body.

**Connection Test Data Performance**
Import or enter connection test-data performance (load and pressure pairs) into a predefined format for two different connection types. The tri-axial stress of the user-defined connection can then be displayed on the design limit plot. This new technology was the result of ISO (International Standards Organization) 13679 recommended practice for testing purposes involving casing and tubing connections.
**Enhanced Schematics**
Enhanced PROFILE™ software like schematics with tool tips for easy viewing.

**Spreadsheet and Graphical Data Views**
Provides spreadsheet data entry, with support for cut/copy/paste and drag/drop operations. StressCheck software provides a template feature for pre-configuring designs that reflect company design standards and available inventories, as well as user and system workspace-preferred layout functionality selection while in design session. It allows graphical views for well configuration, directional profile, formation pressure, fracture gradient profiles and load, internal pressure, external pressure, differential pressure, axial load, and temperature profiles for each load case. It uses graphic and tabular views to display wellbore and load data.

**Convenient Results Configurations**
Provides a design summary of minimum burst, collapse, axial, and tri-axial safety factors for each string, per load and the full tubular program. Standard or user-configured report formats are available, along with user-defined preconfigured display tabs. On-screen results are in user-configurable, multi-pane spreadsheet and plot formats.

**Easy Data Transfer**
Features the American Petroleum Institute, International System, and custom unit systems, along with a comprehensive online Help system. Includes a link to Landmark’s DEX™ data exchange software, permitting easy transfer of relevant data between other DEX-compliant applications. Designs can be exported as *.sck flat files.

**ADVANCED FEATURES**
- Ability to highlight and freeze graph lines to run sensitivity analyses.
- Drag-and-drop casing strings with all the loads and relevant data from one design to another.
- Tab-configuration locking so that multiple pane views can be fixed.
- Gas-over-mud ratio, productive formation pressure to surface internal pressure profile (ratio of well control gas to drilling mud) added to standard list of industry-accepted load cases. Interpolated internal pressure profile of Maximum Anticipated Surface Pressure (MASP) or Maximum Anticipated Wellhead Pressure (MAWP) to fracture pressure at shoe.
- Simple to complex external load profiles, with options for good/poor cement, permeable zones, mud deterioration, annular mud drop, and annular gas migration.
- Pore pressure in open-hole cemented interval.
- Shoe/mud gradients with pore pressure, combines mud-weight pressure column, pressure discontinuity of equivalent mud-weight pore-pressure gradient at prior shoe, and pore pressure in open-hole across uncemented and cemented intervals.
- Default temperature profiles for evaluation of thermally induced loads that arise from drilling, production, and injection load cases; option for user-defined initial condition, and either undisturbed or user-defined service-load temperatures.
- Collapse loads due to salt encroachment.
- Well Containment Screening Tool (WCST) BSEE collapse load.
- Multiple load pressure test; internal pressure test profile share across casing—liner configuration.
System and Software

SOFTWARE REQUIREMENTS
Engineers Data Model (EDM)
Oracle® ODBC Driver

SUPPORTED OPERATING SYSTEMS
Microsoft® Windows® 7
Enterprise 64-bit with SP1

Microsoft Windows Vista
Enterprise 64-bit with SP2

Windows 2008 Server 64-bit R2 with SP1

Citrix XenApp 6.0
Oracle 11.2.0.2
Oracle 10.2.0.4

SQL Server 2008 R2 SP1

• Support casing liner overlapped pressure profile in pressure test load scenarios.
• Both string and load case-specific design factor specification, with independent design factors for pipe body and connection.
• Burst, collapse, axial, and tri-axial safety factors for each load case; burst and axial safety factors based on the lesser of pipe body or connection ratings.
• Load-line generation design based on aggregate of load cases for each load category (burst, collapse, and axial).
• Drag-and-drop selection of casing and tubing sections within interactive graphical design plot.
• User-specified schedule for temperature-dependent yield deration.
• Comprehensive API well-tubulars catalog with provision for user-specified additions.
• Standard API connections and default proprietary connections catalogs with provision for user-specified proprietary connections.
• Single-point converter dialog to show conversion between TVD and MD and vice versa.
• Equivalent von Mises plot view to characterize the exact 2-D plot for the current von Mises criteria.
• WallPlot composer for a single-view montage of the entire design.
• APD (Application for a Permit to Drill) reports, including gas/oil gradient, MASP and MAWP based fraction of gas and mud column definition and frac at shoe or bottomhole pressure calculation methods.
• Send to excel input and output data.

Landmark offers solutions to help you deliver on your business strategies. For questions or to contact your Landmark representative, visit us at landmarksoftware.com.

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