PV Elite®

Product: PV Elite (PVE)

Version: 2019 (21.00.02.0000)

Date: October 2019

Description: PV Elite analyzes and design pressure vessels and heat exchangers in accordance with U.S. National and International codes and standards, such as ASME, PD 5500, and EN 13445.

Sections:

System Requirements

Important: Beginning with Windows 10, Microsoft will enforce the Internet Host Table Specification RFC 952 which mandates that component hostname labels can contain only alphanumeric characters. Hostnames using underscores ('_') are not allowed. Refer to Microsoft KB 101785.Intergraph PV Elite is compatible with Windows desktop operating systems listed below.

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Note: The operating system compatibility details that follow refer to the latest released version of this software. Previous versions of the software might not work with newer operating systems.

Operating System	Compatibility Information
Windows 7/8/8.1* Professional (64 bit) Windows 7/8/8.1* Ultimate (64 bit) Windows 7/8/8.1/10* Enterprise (64 bit) Windows 10 Pro (64 bit) Windows Server (all versions)	PV Elite Development tests these operating systems. PV Elite does not support Windows 7/8/8.1/10 Starter, Home Basic, and Home Premium. The software does not support Windows Vista Starter, Home Basic, Home Premium, Enterprise, Business, and Ultimate. *Windows 8/8.1 – Enable .Net 3.5 prior toinstalling PV Elite. Only tested by Intergraph for the installation of network licensing systems (NetHASP License Manager).

Version Compatibility

For up-to-date information on the software compatibility of this product in a standalone or integrated environment, please refer to the Compatibility Matrix on the Hexagon PPM Support Web site at https://smartsupport.intergraph.com/.

Log on and perform the following steps:

1. Click the **View Downloads** tab.
2. Click the **Product Compatibility** link under **Useful Links** on the rightside.
3. On the **PPM Compatibility Matrix - Product Report** page, from the Select Product list, select PV Elite.
4. From the **Version** list, select the version of PV Elite.

Special Instructions

PV Elite 2019 Version 21.00.00.0000 is a Windows (7/8/8.1/10)-based program. PV Elite may work under Windows Vista, although this platform has not been tested.

Important:

If you are moving to Version 2019 from a version of PV Elite prior to Version 2008, your existing ESL may require a Firmware update to permit Version 2019 to run. You can find instructions on the program DVD in the Firmware.pdf document.

This version of PV Elite should be started by invoking the program, pve.exe.

For more information on installing PV Elite, refer to the PV Elite Quick Start, located with the delivery media.

Documentation

General

Use the Help menu to access the Help files and Printable Guides for this product. For the latest support information for this product, connect to https://hexagonppm.com/ppm-support. Also, you can submit any documentation comments or suggestions you might have on the Hexagon PPM support site.

Printed documentation is not available for separate purchase.

PDF Files

The documentation is provided as .pdf files. You can use any PDF viewer to view the files.

Training

To register for training on Hexagon PPM products, call Training Registration at (800) 766-7701 in the U.S. Outside the U.S., call (256) 730-5400 or contact your local Hexagon PPM office.

For current information on training, connect to http://www.intergraph.com/ppm/training/.

Customer Support

For the latest Support Services information for this product, including solutions to known software issues, connect to https://hexagonppm.com/ppm-support.

To open service requests outside the U.S., please contact your local Hexagon PPM office.

New Features in PV Elite 2019

Code Updates

- Updated to support **IBC 2018** wind & seismic code. (RI-TX-24759)
- Updated to support **Mexican MDOC 2015** seismic code. (RI-TX-22221)
- Updated to support **PD 5500:2018+A1** code update. (RI-TX-24841)
- Updated to support **KHK 2012** seismic code. (RI-TX-1443)
- Updated to support **Type 2 Jackets** for PD 5500 & EN 13445. (RI-TX-23191)

Configuration

- Updated PV Elite to allow the option to make the external length L for cylinders connected to weld neck flanges. (CR-TX-26285)
- Updated PV Elite to allow users in Europe to enter through the keyboard a decimal comma instead of the decimal point in the input. The software should convert the comma to a period automatically. (CR-TX-27346)
- Normally MDMT's are computed using hoop stress because hoop is twice longitudinal. But in a low-pressure column with high bending stress longitudinal might govern. (CR-TX-28335)

Input Processor & Analysis

- Updated PV Elite to show the help topics through a WPF help .NET desktop application. WPF help is designed to be a modern, easy-to-use help application that can run from any folder without formal installation. (CR-TX-24837)
- Updated PV Elite to allow long description names for nozzles so that users can keep description names of longer than 16-character names. (CR-TX-25730)
- Updated PV Elite to consider table UHX-8.1 of ASME Sec VIII Div 1 to determine W* value used in tubesheet calculations and consider full bolt load W*=Sa*Ab, in the tubesheet calculation. (CR-TX-25353)
- Updated PV Elite to add a checkbox to allow the option to make the external length L for cylinders connected to weld neck flanges include the Flange overall length. (CR-TX-26285)

- Updated PV Elite to add a "service type" and "Radiography" input field in case of a heat exchanger component, so it that will be useful to apply different minimum thickness as per UG-16(b) as per service for shell side, as well as tube side and will comply Code requirements. (RI-TX-21488)

- Updated PV Elite to include an option to enter allowable shear stress for anchor bolts based on ASD, Steel Construction Manual, not ASME Sec II, for shear stress analysis. (CR-TX-12919)

- Updated PV Elite to add bolting data for 3P metric bolting designs. Bolt data is per Table H-1 of ASME PCC-1. (CR-TX-24815)

- Updated PV Elite to show the fabricated section ring on the inside or outside of the vessel as specified. (CR-TX-15558)

- Updated PV Elite to allow the user to specify that the Pressure (Design) only cases are to be used to compute the MAWP for hydrotest for ASME heat exchangers. (CR-TX-26654)

- Updated PV Elite to add a check box that allows the user to force the VIII-1, 1-5 calculation to happen when delta is greater than alpha, and the cone is connected to a flange. (CR-TX-27162)

- Updated PV Elite to set the allowable for Pm+Pl+Q to be changed to 3*Sh if there are no thermal expansion loads provided, also the user can specify a cyclic temperature to calculate the allowable for Pm+Pl+Q stress based on the rules of ASME VIII-2 Part 4, 4.1.6.3 (a) and (b). (CR-TX-26685)

Output Processor & Reports

- Updated PV Elite to show all the data points in both Point Thickness Readings and Critical Thickness Profiles in the output report to verify that they are correct without having to go back to the input file. (CR-TX-4668)

- Updated PV Elite to show the total wind deflection that includes user defined forces, so that users do not have to add them together by hand. A line will be included after the deflection stating, "Total deflection, including wind and user applied forces". A user force must be specified. (CR-TX-25243)

- Updated PV Elite to support and show UW-16.1 sketches v-1 through w-2, so that users can see the weld representations in the nozzle calculation report. (CR-TX-26306)

- Updated PV Elite to add a note to show that ambient temperature is used instead of design temperature for WRC 107/ 537 in the Lifting Lug calculation report. (CR-TX-26267)

- Updated PV Elite to report correctly the lifting lug placement detail for horizontal vessels. Currently, lifting lug report for horizontal vessels shows as "Design reaction force at the tailing lug". It must be Left or Right lug. (CR-TX-26242)

- Updated PV Elite to see the title of the weight type in the Element and Detail Weights report so that it can more easily identify where the weights are coming from. (CR-TX-26592)

- Updated PV Elite to clean up printout for Electric Immersion Heaters in the Internal Pressure Calculations report while running a PED hydrostatic test. (CR-TX-26656)

- Updated PV Elite to suppress a Flange governing being flagged in the Failures Summary and only show the warning during the analysis run time iteration. (CR-TX-26607)

- Updated the API 579 report to show all the data points in the output to verify that they are correct without having to go back to the input file. (CR-TX-26254)

- Updated the WRC 297 allowable stress for Pm+Pl+Q to 3*S (which is taken from ASME section VIII, Division 2), shown in the Vessel Stress Summation Comparison table stress. (CR-TX-10228)

Fixes

User Interface/Graphics

- Fixed an issue in PV Elite when the model has a large nozzle with a re-pad. The re-pad graphics is cut off near the seam of the vessel. The software has been updated to show the full reinforcement pad even if the nozzle re-pad diameter is beyond the cylindrical element weld seam. (TR-TX-20163)

- Fixed an issue in PV Elite where on some machines generates an error message "Failed to load driver. Setting default driver to ..". This was caused in the new device driver implementation in PV Elite 2018. The driver returned by Hoops graphics library was only checked for part of the name like directX and ignore the part “hardware” or “software”. This will prevent this error message from coming up. (TR-TX-24546)

- Fixed an issue in PV Elite where it shows "Appendix 1-10 Passed" as an incorrect status message shown in the nozzle input dialog box of a large opening since Appendix 1-10 calculations were not chosen when we save and close the nozzle dialog box. The software has been updated and the status message shown is "Large Opening Analysis Passed". (TR-TX-26150)

- Fixed an issue in PV Elite where the software is not warning for the right ranges of bolt materials when the metric box is checked. The software has been updated and when the bolt diameter is within the range of the material spec, bolt diameter should be in black font. (TR-TX-26931)

- Fixed an issue in PV Elite where the Support Lug input shows the representation of the gussets in the correct parallel position, but the 3D graphics show gussets aligned radially. The software has been updated and the lug pad graphics show parallel to the shell surface. (TR-TX-1017)

- Fixed an issue in PV Elite where installing PV Elite with SPLM licensing will not allow the program to use the feature of older versions of the ASME code (2013 and 2015) because the required file for running with a SPLM license is not included in the program subfolder for previous versions. The software has been updated and the required files will be placed in the 2015 and 2013 subfolders when the program opens. (TR-TX-25087)

- Fixed an issue in PV Elite where the T notes in Table 2A, 2B, and 5A, 5B are different than for customary tables; e.g. a material with note T5 will have a completely different creep range for metric than customary. The material databases have been updated and the material creep temperatures in PV Elite match their respective listed creep temperatures in ASME, Section II, Part D. (TR-TX-26798)

Output Reports

- Fixed an issue in PV Elite adding the static head pressure to the Pmax value shown in the input echo section of the **EN 13445 Local Stress Analysis** found in the **Nozzle Calcs** report. The software has been updated to reflect the permissible pressure plus the static head pressure in the report, considering that the other results were already including the static pressure except for that line in the input echo. (TR-TX-22219)

- Fixed an issue in PV Elite to calculate correctly the MAWP for a cone in the **Conical Section** report, so that the MAWP is computed correctly in the EN 13445 code shown in the **Internal Pressure Calculation** report. The software has updated the computed MAWP which should reflect the entered design pressure. (TR-TX-24386)

- Fixed an issue in PV Elite where it was taking the incorrect **gasket inside diameter** according to Table 9, B16.20 and instead using the dimensions for Class 600, which is incorrect. It should be using Class 1500 dimensions. The software has been updated to use the correct dimensions for the gasket inside diameter for **class 900** standard flanges. (TR-TX-24341)

- Fixed an issue in PV Elite the calculation on the support lug report, shows the **weight** Load at the top of one **Lug** is less than the vessel operating weight value. The software has been updated to show the correct operating weight vs weight of one lug in both the **Sup. Lug Calcs Ope** report and the **Element and Detail Weights** report. (TR-TX-24602)

- Fixed an issue in PV Elite where the **Element and Detail Weights** report would show **negative values** for the element ID volume and weights for the liquid details. The software has been updated to show the weights and volumes are not negative in the **Element and Detail Weights** report. (TR-TX-24603)

- Fixed an issue in PV Elite where the **List Dialog** changes the node number of a platform detail after changing the distance 'from Datum'. The software has been updated to not change and edit the platform data in the **List Dialog**. (TR-TX-25174)

- Fixed an issue in PV Elite where the Floating Head thickness calculation was depending on just the external pressure. The software has been updated to show that the differential pressure is used rather than the full shell side pressure for the analysis on the Floating Head assembly in the **Floating Head** report. (TR-TX-25080)

- Fixed an issue in PV Elite where the calculation of the required thickness per UG-37(a) of welded flat head, Tr in the nozzle **Quick Calculation** report adds corrosion allowance to the outside diameter of the flat head; however, the outside diameter of flat head without corrosion allowance is correctly used in the **Nozzle Calc** report. The software has been updated to calculate the required thickness per UG-37(a) of welded flat head, Tr with the same result between the **Quick Calc** report and the **Nozzle Calc** report in the output processor application. (TR-TX-25285)

- Fixed an issue in PV Elite where a warning message "Enter no more than 16 characters" shows up and doesn't allow the user to select the weld designation in the **Nozzle** dialog. The software has been updated to enable the user to select weld designation "4.2.11 4-10-D" without any issue. (TR-TX-25420)

- Fixed an issue in PV Elite to show a warning message when the nozzle is near to the knuckle region. EN 13445 Section 7.7.2 'Conditions or applicability' specifies how near a nozzle may be to the knuckle region. The software has been updated and now PV Elite issues a warning in the output results that Section 7.7.2 has been violated, axial distance from Knuckle Edge to Nozzle Edge and axial distance from dMin to Nozzle Edge. (TR-TX-25543)

- Fixed an issue in PV Elite when a flat cover is welded directly to a cylinder, the diameter of the cover is defined as the inside diameter of that cylinder and not the outside diameter of the flat head. The software has been updated and now PV Elite defines the diameter of the cover as the inside diameter of the cylinder in the **Internal Pressure** calculations report. (TR-TX-26103)

- Fixed an issue in PV Elite where the software provides a conservative number of cycles when it performs a fatigue analysis but when Ce is less than 1, the number of cycles does not match with "hand calculations" and give a much lower number of cycles. The software has been updated and now PV Elite calculates the correct max number of cycles in the **Fatigue Stress Evaluation** report. (TR-TX-26165)

- Fixed an issue in PV Elite when the Material Name is left blank, the software tends to crash if the users exit out of the Material Selection window. PV Elite doesn’t know how to interpret a blank Material Name. The software has been updated and now PV Elite doesn't crash if the user decides to leave the material name blank. (TR-TX-26430)

- Fixed an issue in PV Elite where **Flange Calculation** report and the **Internal Pressure Calculation** reports do not match the MAWP when the Flange is a non-weld neck type body flange. The software has been updated and now the hub MAWP should not be computed for non-weld neck type body flanges so the reported MAWP for Flange elements will not differ between reports. (TR-TX-26717)

- Fixed an issue in CodeCalc where after viewing information in the Outer Cylinder dialog in the ASME Tubesheet component, the application would sometimes crash. The software has been updated and now CodeCalc doesn't crash after entering values in the Outer Cylinder dialog. (TR-TX-26809)

- Fixed an issue in PV Elite where the wind and seismic *.pvu data is incorrect for external

interface programs like the U-Form spreadsheet, Inventor or Solidworks. The software has been updated and now the Wind and Seismic code data should be properly shown in the PVU file. (TR-TX-26600)

- Fixed an issue in PV Elite where if the user had previously defined a value (other than 0) for the “User Defined MAWP” field, that value is displayed under MAWP for all nozzles found in the **Nozzle Summary** report even though the field is grayed out. The software has been updated and now when the switch for “Is this a Heat Exchanger” is active, the fields for “User defined MAWP” should be fully disabled and any previously defined non-zero value should not be considered in the **Nozzle Summary** report. (TR-TX-26633)

- Fixed an issue in PV Elite where in a horizontal vessel with a nozzle located at the top of a shell element, there is an error stating Flange Rating < Design Pressure (MAWP + Static Head). The software has been updated and if the nozzle is located at the top of the horizontal vessel, static head should not be added to MAWP when checking the to see if the Flange Rating is less than Design Pressure in the Nozzle input dialog. (TR-TX-27126)

- Fixed an issue in PV Elite where the Terrain category selection for wind design code 'SANS 10160-3:2010' does not match the description in the **Wind Load Calculation** report. The software has been updated and the Terrain category is shown as 'B', same as the input selection in the Wind Data tab. (TR-TX-26935)

- Fixed an issue in PV Elite where when there are two mating flanges, then user is unable to select a different bolt material. The software has been updated and the user is now able to select any flange bolt material and update the mating flange as well. (TR-TX-26536)

- Fixed an issue in PV Elite where a check was being made on the size of the weld when it should not have been made when an external corrosion allowance was specified and there was no reinforcing pad. The software has been updated and it no longer displays a warning about weld sizes. (TR-TX-26409)

Fixes in PV Elite 2019 SP1

User Interface/Graphics

- Fixed an issue in PV Elite where the top head platforms were being deleted after exiting the list dialog if the user selects the Platform list table. The software has been updated and the top head platform should no longer be deleted after exiting the list dialog. (TR-TX-28504)

- Fixed an issue in PV Elite where the users want the maximum value of Response Factor to be 8 but the seismic design code is limited to 5. The software has been updated and the limit response factor has been extended from 5 to 10 in the seismic design input data. (TR-TX-28493)

- Fixed an issue in PV Elite where in some cases the tubesheet was not where it should have been in the 3D graphic. The software has been updated and the tubesheet detail is now

shown sandwiched between two Flange elements. (TR-TX-28689)

- Fixed an issue in PV Elite where the Platform details were not showing up in the Platform tab in the List Dialog for Horizontal vessels. The software has been updated and users can modify easily multiple platforms in the List Dialog for horizontal vessel models. (TR-TX-29044)

Output Reports

- Fixed an issue in PV Elite where the ASME TS Calc report states results for Shell Axial Membrane Summary table with a force conversion factor instead of a stress conversion factor when using metric units. The software has been updated and the values displayed under “Ten” and “Allwd” column for the Shell Axial Membrane Stresses has been fixed to use the correct stress conversion factor. (TR-TX-28610)

- Fixed an issue in PV Elite where in the Quick Screen analysis, the nozzle description may not match the actual nozzle description. This issue has no effect on the calculations and the descriptions are correct in the output reports. The software has been updated and the nozzle description will match the actual nozzle description. (TR-TX-28494)

- Fixed an issue in PV Elite where the Earthquake Load Calculation report states a typo in KBC 2016 seismic output report regarding [Ta] equation reference. PV Elite displays 0.306.5.5 as the code equation reference when it should state 0306.5.5. The software has been updated and the output report displays KBC 2016 equation reference 0306.5.5 [Ta] correctly in Seismic Analysis when applicable. (TR-TX-28447)

- Fixed an issue in PV Elite where the Wind Load Calculation report states an incorrect elevation of an added weight, but the correct derivation of the elevation should the centerline offset plus the base elevation. The software has been updated and the correct derivation of the elevation should the centerline offset plus the base elevation. (TR-TX-28464)

- Fixed an issue in PV Elite where the Stress due to Combined Loads report states the vertical acceleration (according to EN 1998-1: 2004) without vertical forces when the % of horizontal load applied to vertical is greater than zero. The software has been updated and the vertical acceleration will include vertical forces when the % of horizontal load applied to vertical is greater than zero. (TR-TX-28771)

- Fixed an issue in PV Elite where in cases where the design temperature was greater than 1000F, the material yield strength could not be determined. If that was the case, the PM+PL+Q allowable stress could not be determined. The software has been updated and will use the external pressure charts to determine the yield stress. If that fails, approximate the yield stress as 1.5 times the material hot allowable stress. (TR-TX-28495)

- Fixed an issue in PV Elite when converting values to users specified units, the software does not use the correct conversion factor to yield appropriate values for Shell Band Stresses. The software has been updated and the correct conversion factor to yield is appropriately applied to the values for Shell Band Stresses in the ASME TS Calc report. (TR-

TX-28610)

- Fixed an issue in PV Elite where in some cases of very small exchangers (< 10 inches ID), the UHX calculations might produce a NaN (not a number) in equations. In these cases, the stresses are very, very low; therefore, we need to check for this and set the required tubesheet thickness to the tube thickness. The software has been updated and the results will reflect a note if this issue occurs in the ASME FI-TS Calc report. (TR-TX-28850)

- Fixed an issue in PV Elite where the Flg Calc [Int P] report states flange loads incorrectly used as mating flange loads for the other flange. The software has been updated and the mating flange loads from one flange should not be used in another flange calculations when the tubesheet type is u-tube. (TR-TX-28330)

- Fixed an issue in PV Elite where the Vessel Design Summary report was missing heading lines for Materials of Construction table for some rare cases. The software has been updated and the report displays the two heading lines for the Materials of Construction table. (TR-TX-28938)

- Fixed an issue in PV Elite where the Nozzle Calcs report flags a violation of Figure 3.5-31 when the violation does not exist. The software has been updated and the warning message is no longer shown in this very specific case for the PD-5500 vessel model. (TR-TX-29079)

- Fixed an issue in PV Elite where an incorrect value of FS is chosen for spherical shells in the External Pressure Calculations report. The software has been updated and the analysis for external pressure on a sphere select the appropriate value of FS from equations (4.4.1) to (4.4.3) as determined by Sy and Fic. (TR-TX-29068)

- Fixed an issue in PV Elite where the forces generated on the saddles of a horizontal vessel from the user applied forces in the Z and Y directions are incorrect in the Horizontal Vessel Analysis (Ope.) report. The software has been updated and the z and y forces accurately distribute the loads on the either saddle. (TR-TX-28841)

- Fixed an issue in PV Elite where in WRC 107 local stress analysis calculation, if the force P is positive, the flange is subject to a compressive force. The software has been updated and when the force P in the WRC 107 section is negative, the force 'F' should be positive, and when the force P is positive, the force 'F' should be set to zero in the Nozzle Flange MAWP report. (TR-TX-29067)

- Fixed an issue in PV Elite where in WRC 107 local stress analysis calculation, the 'Stresses in the Vessel at the Edge of Reinforcing Pad' table show only zeroes stresses. The software has been updated and the 'Stresses in the Vessel at the Edge of Reinforcing Pad' table should not be only zeroes in the Lifting Lug Calcs report. (TR-TX-29070)

- Fixed an issue in PV Elite where in the Nozzle Calc report incorrectly considered the 'area cut by thickness limit' when the nozzle type is set-on in the area calculation A41. The software has been updated and the Nozzle Calc report now correctly considered the nozzle type condition. (TR-TX-29114)

Input Processor & Analysis

- Fixed an issue in PV Elite where when exporting load results to the xml and ini files for Foundation 3D, the file extension contained an extra character. The software has been updated and the correct file names and extensions (*.ini and *.xml) are now created in the current file directory. (TR-TX-28772)

Fixes in PV Elite 2019 SP2

User Interface/Graphics

- Fixed an issue in PV Elite where the analysis run in metric units, NozzlePRO does not return the correct thermal strain temperatures as specified by the user. The software has been updated and CodeCalc will return the correct thermal strain temperatures entered by the user. (TR-TX-30833)

- Fixed an issue in PV Elite where the Undo button would reset any nozzle component materials. The software has been updated and the materials for the Flanges and Re-pads no longer change after using the Undo button. (TR-TX-31557)

- Fixed an issue in PV Elite where the inside gasket dimension for 3in NPS 900 Class is incorrect in the ANSI Flange Dimension lookup file. The software has been updated the Gasket ID value should be 3.75 in. (TR-TX-31750)

- Fixed an issue in CodeCalc when we click on 'Cancel' in the 'Tubesheet Extended As Flange' dialog in Tubesheet tab of 'TEMA Tubesheet' component, CodeCalc crashes. The software has been updated and CodeCalc no longer crashes when you select 'Cancel' in the 'Tubesheet Extended As Flange' dialog. (TR-TX-30538)

Output Reports

- Fixed an issue in PV Elite where the **Nozzle Calc** report re-pad calculation was not considered with the shell as it should have been, the re-pad can be included with the shell thickness for the equivalent shell thickness [eq] otherwise if the condition is not met, the shell thickness of the shell alone [ea]. The software has been updated and the re-pad is considered be included in the shell thickness if the conditions are met for the inclusion per sect 16.5.7.2 equation (16.5-20) of EN 13445. (TR-TX-30518)

- Fixed an issue in PV Elite where the **Internal Pressure Calculations** report Pneumatic test pressure factor of 0.95 is used instead of 0.8 for test pressure calculations in case of ASME Division 2 and class 2. The software has been updated and the test pressure factor for pneumatic testing per table 4.1.3 of ASME Section VIII Division 2 and Class 2 used is 0.8. (TR-TX-30493)

- Fixed an issue in PV Elite where the **Nozzle Calc** report would change the vessel material UNS

number in the WRC section. The software has been updated and the report now displays the correct vessel material UNS number in the WRC section. (TR-TX-30690)

- Fixed an issue in PV Elite where the **Earthquake Load Calculation** report showed a not applicable calculation for the minimum value of CS per 15.4-2. The software has been updated and correctly computes CS value when S1 is lower than 0.6(g). (TR-TX-30735)

- Fixed an issue in PV Elite where the **Nozzle Flange MAWP** report is not computing the MAWP of flanges after being de-rated for a nozzle with a 610mm OD (equivalent to a 24in NPS OD). The software has been updated and the report now computes the MAWP Flange Reduction correctly, especially when working with a nozzle that has an OD of 610mm equivalent to OD of a 24in NPS. (TR-TX-30957)

- Fixed an issue in PV Elite where the **Conical Section** report used the moment from the base of the skirt for the conical section moment at the large end of the cone. The software has been updated and now the calculation uses the moment acting at the top of the skirt where it is attached to the cone. (TR-TX-30832)

- Added a warning message in PV Elite in the **Warning and Errors** report to recognize if two flanges exist at either side of the floating head seal, one flange is on the shell side, and the other flange is on the channel side and how it computes the mating flange loads. (TR-TX-30652)

- Updated PV Elite to update max limit for Sa(0.2) to allow higher g values as per 2015 edition of NBC. (CR-TX-30163)

- Fixed an issue in PV Elite in the **Internal Pressure Calculation** report where the reduced MDMT for VIII-1 carbon steel models should not be less than -55F when the box controlling this behavior is checked. (TR-TX-31039)

- Fixed an issue in the **Earthquake Load Calculation** report per IS 1893 Part 4 2015 Annex B, Sa/g can be calculated using the relevant formula corresponding to soil type. For this case soil type is medium and time period is 0.6704s. Hence relevant formula to be used is Sa/g = 1.36/T, which comes out to be 2.03 and not 2.5 as calculated in PV Elite 2019. The software has been updated the computed the value of Sa/g is correctly calculated per IS 1893 Part 4 2015 Annex B equations and soil type. (TR-TX-31723)

- Fixed an issue in the **Conical Section** report when the cone has a flare and the cone-cylinder junction is not a line of support, per UG-33(f), the thickness shall not be less than the required thickness of adjacent cylindrical shell. However, in the individual cone calculations, the top cone uses required flange thickness for comparison. The software has been updated and the report calculation of the cone thickness due to Internal pressure will comply with UG-33 (f). (TR-TX-31116)

- Fixed an issue in PV Elite in the MDMT Summary report where the software was giving a 30-degree PWHT credit when it should not have been when PWHT was required at a flange to shell weld. The software has been updated and now correctly avoids giving a 30-degree PWHT credit for Flange element. (TR-TX-30467)

- Fixed an issue in PV Elite in the Conical Section report where in a particular issue, the vertical

loads on vertical vessels on lugs that were analyzed using earthquake codes where Gy were having an issue with vertical weight loads used in the conical analysis. The weight loads were being doubled. The software has been updated and the vertical loads are correctly displayed in the conical analysis. (TR-TX-30600)

Input Processor & Analysis

- Fixed an issue in PV Elite where Div2, Class 1 Elliptical Head Calc is using 1.5*SA instead of SY for C3, although not in creep. The software has been updated with the latest bin files with the corrected creep temperature inputs (-1) for all D2C1 and D2C1M materials. (TR-TX-31404)

- Fixed an issue in PV Elite to analyze a file that has a path length greater than the current limit, so that files that are stored in a deep path do not have to be analyzed in a shorter path. The software has been updated and increased the max path length to allow files to be analyzed in a deeper path location. (TR-TX-31135)

Open Problems

None

Legal Notices

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Documentation

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