Version notes

5.50b01

There was a bug introduced in v550a05 that prevented network users running Windows Server 2012 R2 (and perhaps others) from running REP directly from the server. This has been fixed with this version.

Extra checks have been introduced to warn users of un-saved files on exit.

5.50a05

The beta distribution can now be defined using P90-P50-P10 (click here)

When pasting area/depth data from Petrel the depths can be negative (as in TVD) and in reverse order. A button "Un-petrel" in the surface entry screen converts these numbers to REP standard. See GRV entry.

Also in the surface entry dialog the units control has been re-jigged. You can now change unit without converting the values.

5.50a04

There is a new facility to import prospect data from an XL spreadsheet.

5.50a02

A bug that caused large maps to "disappear" after a few minutes digitizing has been fixed.

5.50a

IMPORTANT NOTE ON MAP DIGITIZATION

The "old" mapping digitization is no longer supported, We were using a 3rd party image toolkit which is no longer guaranteed to work with the latest operating systems. You are still able to read the area/depth table information from the SRF file but in the unlikely event that you want to amend an old surface file you will need to use the new mapping facility to retrace the contours. This new system has been updated, and a number of bugs (including the zooming) fixed.

5.41n01/n02

"Access depth" is defined as the depth at which an exploration well intercepts the target reservoir. If this depth is below the hydrocarbon-water contact you will not make a discovery even if the prospect "works" in every other respect. Access depth introduces a new sort of risk. The concept can be used in both prospects and consolidations.

In Sw-height calculations:

> Previously (and currently by default) the Sw is calculated and clipped to be at least the irreducible (Swirr) *before* the error function - if any - is applied. The final Sw could therefore be less than entered irreducible. A new check-box has been added which reverses this order, ensuring that the final Sw is never less than Swirr.
>
> When storing the iteration data points Sw calculated by the Sw-height function is also stored, and can be displayed or stored in the results csv file.

5.41m02

In consolidations, the output binning (which controls the resolution, mostly) has been improved. There might be some very slight change in the result (<1%) but the plots should look better.

The graphs of input variable distributions in printed output have been improved, and now match the screen dialogs.

When entering variable distributions you can now go straight to the PDF fitting facility (and back again). Click the [Fit] button on the dialog. See also Fitting distributions to analogue data.

The Tools menu in prospect/field calculation has a new option: deterministic probabilities. This allows you to check where, on the entered (variable) or calculated (result) probability distributions a single value lies. It might be used to see how estimated compare pre-/post-drill (though it is more comprehensive to use prospect evolution to do this).

5.41m01

Clipped distribution statistics used to show the underlying distribution numbers rather than the results using the clip. Now the numbers shown are those resulting from the clip, and the plot shows the true clipped distribution. The variable summaries (in the dialog and in the printed output) also show the clipped values. Where the clip is at the tail of a distribution the plot may "slope" through the clip, suggesting the possibility of values above the clip (or below, in the case of a lower clip). This is a plotting issue only: in all calculations the clip is absolute.

It was quite hard to specify dependencies correctly when using a layered model. This bug is now fixed. There may remain a problem with lower layers where the independent variable is not defined as a layer property (e.g. spill point or formation volume factor). This will be fixed in a future release. in the meantime, and where Sw is dependent on a contact, it is best to use the Sw-height function (which can be defined separately for each layer).

5.41l02

The fixed scales (see k08) now remain fixed after a recalculation.

When using prospect models, the "Target final GPOS" now works a lot better.

5.41l02

The fixed scales (see k08) now remain fixed after a recalculation.

5.41k08

You can fix the scales of results plots shown on the summary panel and print-outs. Right click the mouse in the plot. See Setting results scales.

5.41k07

There's a new risking scheme - 26 - similar to 16.

5.41k04

A bug when changing a prospect variable value (e.g. porosity P90) while running a consolidation could cause the program to crater at the end of a consolidation recalculation.

5.41k03

A bug where the unit of area uncertainly was unspecified when it should have been "%" has been fixed.

5.41k01

There are two new risking schemes - 24 (similar to 22) and 25.

5.41j07

Some users using the REP database did not have permission from their IT dept to write files to the database archive folder, which resulted in errors due to "empty" entries. A new option under the database "File" menu has been added to delete these entries.

5.41j06

You can now run shale gas calculations using a gas condensate case. It is assumed that the sorbed gas has no liquids content. The CGR (or condensate recovery factor) is applied only to the free gas component.

There is now a warning when you change to oil in a shale gas or CBM case (which results in a conventional pass).

The dialog labels for input variable plots for which values are yet to be entered are now displayed correctly.

5.41j03

Consolidating prospects in which all the net production interests were zero completed OK but only the mean value was shown: P90/P50/P10 were all zero: fixed.

When changing input variable units, the input variable plot label did not reflect the new units. Now it does. Changing the units could also confuse the data points plot conditions.

5.41j02

Phase chance was incorrectly written when saving a consolidation, and a new calculation was required to restore it. This is now fixed.

In some risking schemes you can disable the chance rounding (normally to the nearest 5%). See Installation

5.41j01

Consolidations with risking schemes using an amplitude modifier were not handling common chance reliably. See Common chance with an amplitude modifier.

5.41h10

The mapping function can now display PDF and PNG formats. A PDF file has to be converted before it can be used and the utility for this is included in the program, but note that the screen may flash briefly while doing this conversion, this is normal.

5.41h09

In the case of using the minimum of spill point and column height top calculate GRV, there was no independent check that sufficient contour range existed to allow calculation of volume at every possible

column height. If the calculation failed during a run, a zero volume was returned, and this, being less than the volume from the spill point estimate, was the final GRV. Now the spill point GRV is used.

Top and bottom surfaces could often end up with different depth and area units. his no longer happens and you can choose the units from the surface entry dialog.

The input variable entry dialog could wreak havoc when entering a new variable; now the dogs of war are un-slipped.

5.41h07

Some consolidations with risking schemes including the amplitude modifier (but where there was no amplitude modifier entered) had a GPOS of 100% regardless of the input prospect risks. Now fixed.

5.41h04

Risking scheme 2 and scheme 5 now have an amplitude anomaly modifier - as in the SAAM consortium usage.

In prospects:

- You can now force the stacking factor to be an integer (whole) number.
- Deleting models in the models dialog caused instability - now doesn't.
- The sensitivity plot (spider diagram) is now better drawn.
- The layout of the variable dependency dialog is changed a bit, but the functionality remains the same.

5.41h03

A new feature has been added to aid error reporting. In the event of a crash, the "Report" button on the error message window auto-creates an email report for sending to support@logicomep.com.

5.41h01

Some bugs in Consolidation export to XL have been fixed.

A bug when displaying a decision tree has been fixed.

5.41g07

Under some circumstances, pasting from an XL spreadsheet to an area/depth table failed - this has been fixed.

In the prospect database, consolidation net volumes and whole trap volumes were identical - fixed.

5.41g02

A bug when copying probability distributions to other loaded prospects has been fixed.

The prospect/well location in Prospect ID allows for either UTM or lat/long entry. It will convert from one to the other if you specify the central meridian of the UTM and the co-ordinate spheroid. In set-up | installation you can specify the default system for new prospects.

5.41f23

In rare cases (usually associated with GRV calculated from two surfaces) the GRV distribution limits were too widely spaced. This cased strange-looking plots. This is now corrected. The effect was purely visual - the numerical results were correct.

5.41f22

Database functionality has been further improved.

Validate/Archive function uses "Peer Review" folder in User Setup and "Save Anyway" option added to allow archiving with missing key fields.

Pre-post drill evaluations can be exported to an XL file.

Single prospect export function has been extended to produce a multi-tabbed XL file with one tab for each prospect. Also, the XL file can be edited and imported back into REP.

Printouts (full and summary style 5) now include the Spheroid and coordinates (lat/long or E/N).

5.41f14

The probability of achieving the mean is shown on the "More stats" dialog. Previously only technically successful numbers were shown. It is now shown also for economically successful results (when clicking the [<>] button on the main dialog).

When viewing data points (from "Calculate | data points" you can now filter plotted points using other data values. See the "Conditions" box on the plot options dialog.

5.41f13

Some more reporting bugs in the database functionality have been fixed.

5.41f10

Some bugs that caused the reporting of consolidation results in the database functionality to be blank in some circumstances have been fixed.

A bug in the database report rename function that caused reports to be un-deletable has been fixed.

5.41f08

A bug that caused the GRV area-thickness table (when loaded from a net pay surface file) to "lose" its crest value and first contour has been fixed.

5.41f03

A new option in consolidations - Drilling success envelope - has been added to the "Calculate" menu. This produces a graph of the success case results as wells are drilled.

5.41f01

Dummy consolidation entries at the second level (i.e. when they were part of a consolidation itself being consolidated) now work correctly.

A bug that cause plots occasionally to show blank grids has been fixed. And in "data points", the drop down control for choosing plot axes now works properly.

5.41e09

A bug occasionally caused the wrong "popup" graph to be drawn when both the prospect and consolidation windows were open, this has been fixed.

Trying to set the temporary default "beta" style from the parameter entry dialogue caused a crash, now fixed.

In consolidations, trying to use "dummy" entries with the "beta" function caused a crash in some circumstances, now fixed.

5.41e08

A bug when deleting and creating Consolidations has been fixed.

5.41e07

Consolidating unconventional volumes (both shale gas and cbm) caused an error - the calculation did not complete - if (a) the prospect was loaded in the prospect section and (b) it was using a Langmuir isotherm. This is now fixed. Also the environmental risk is now being correctly displayed in the common chance dialog (although the calculation was correct).

5.41e06

In consolidations: we found that when consolidating very risky prospects the number of iterations, although increased automatically, was sometimes not increased enough. We have therefore changed the algorithm that decides how much the increase should be. You may therefore find that when recalculating an existing dataset the numbers are changed. In most cases this change will be trivial.

You can look at the variation in consolidation results (P90, P50, P10 and mean) occurring as a result of the statistical process. In particular, it helps understand whether there are sufficient iterations in your analysis. See Statistical stability.

A bug which meant that prospect calculations within a consolidation were not necessarily run with a fixed seed (and therefore showed non-"exactly repeatable" results) has been fixed.

5.41e05

You can now export the results of each iteration in a consolidation calculation. See Saving and storing iteration results

5.41e03

A bug that prevented maps being printed with consolidations and a default metric depth units error for a new prospect have been fixed

5.41e02

A bug that caused "grief" when entering the common chance dialog with a consolidation of consolidations has been fixed.

5.41e01

A bug that prevented a variety of image formats being recognized in the "new" map digitising module has been fixed.

5.41d04

A bug in the checks made before the calculation started caused a spurious error in some layered prospects. This is now fixed, and an option added under "Calculate | Options" to force the program to do the calculations even if a supposed error was found. Use this option with caution and trepidation.

A bug in the printing for certain combinations of report style has been fixed.

5.41d02

In consolidations, dependency between variables can now be negative.

5.41

In consolidations, there is a new option from the calculate menu called "Outcome distributions". For each outcome in a consolidation the chance of that outcome, and the P90, P50, P10 and mean volumes are written to a csv file which can be readily loaded up in a spreadsheet (and directly from the program). You can only run this calculation when all the consolidation inputs are prospects.

There is a new resource play module, released as beta in 5.41. We'd be grateful for any and all feedback.

The beta distribution now has an extra parameter λ (lambda). This controls the sharpness of the distribution. To change λ, click the "Style button next to the shape entry on the input variable dialog, or the "More.." button in the PDF calculator dialogs. Increasing λ will sharpen up the distribution, decreasing it will make it ever more stodgy. See beta distribution.

The file database admin tool (Main window, "File | File database admin") now allows you to identify likely duplicates, by showing them in green in the list. It will also identify files that cannot be read, and show them in red.

In prospect models, the model chance can now itself be a probability distribution. See Prospect models

5.40+

IMPORTANT NOTES - Please read!

The input sampling algorithm has been slightly revised. It affects the results a little, but not much; and change is within the statistical variation of the Monte-Carlo process. If, when recalculating prospects and consolidations, you want to get identical results to those of earlier versions go to Calculate|Iteration Control and choose "Original" at the 'Sub-sampling' entry in the Iteration control' box. This choice is not saved.

We have identified a long-standing bug in two phase systems where the second phase (gas cap in an "oil" reservoir or oil rim in a "gas" reservoir) has a probability of occurrence less than 100%. The program was double-counting this risk. In other words, if you entered a probability of a gas cap of 80%, the program was actually calculating as if it was 64%. **This bug was corrected with version 5.41b.** To recover your previous results, you should change the probability to the square root of the previous one when (expressed as a fraction). Whilst an estimate of the probability of a secondary phase is usually approximate, the bug can have a significant effect on the calculated volumes. We very much regret this error.

5.40

Plotting the actual data points used in a prospect calculation has been revised, and now incorporates the results as well as the input variables. See Data points. You can also write all the iteration data (input and results) to a csv file, and mess about with it in a spreadsheet.

Fluid correlations and unit conversions have been moved to a new menu item called "Tools" on main REP window. Two new facilities are available here

> Calculator is a tool where you enter your own probability distributions and equations, and make a MC calculation. You can duplicate many of the standard REP calculations, though of course you do not have access to the fancy stuff like area-depth and Sw-height.
>
> PDF fit fits normal, lognormal and beta distributions to data. These data can be anything, and are loaded most conveniently from the clipboard, though you can also read them direct from an XL spreadsheet or csv file.

When you are linked to a database, the key entries in prospect identification (e.g. basin and play) are optionally drop-down () lists where the lists are constructed from the database. It is not necessary to choose an item from the list, but can make it easier when you come to submit your prospect to the database.

In production profiles, a limiting decline rate has been added to the hyperbolic decline function. This is useful for shale gas and other tight reservoir forecasts.

In fluid correlations you can know calculate total sorbed gas content from a Langmuir isotherm.

5.32e

In consolidations, you can now link models in input prospects. See dependent models.

5.32c

Normal and log-normal distributions are defined by any two points on the distribution. You can now customise the distribution to allow entry of any two points you want, not just P50/P10 etc. See distribution styles.

There are a number of "tidies" in the loading of projects, and XL export.

5.32

In the GRV model, it is now possible to define the base of the hydrocarbon column as the minimum of spill point and column height. You must of course enter both distributions. See Gross Rock Volume.

The full printout format has been revised and now includes all comments and other data.

You can enter deterministic values and plot them on a reality plot. These values are not generated by REP, they are single values from another source - e.g. a static or dynamic model result. See Deterministic estimates and Reality plot.

5.31

There's a new risking scheme 16, based on scheme 8 (a minimum risking scheme). It also includes an adjustment for any amplitude anomaly, which can be positive or negative. This adjustment is added to the usual GPOS calculated by multiplying the main factors.

The approval/appraisal procedure prospect ID has been updated. It now has its own tab, and you can set your own list of titles for the people involved in "Installation | Approvals list".

Also in prospect ID, there is a new classification: "Status". This is Concept, Lead Prospect or Discovery. Prospect class now reflects the likely uncertainty in the prospect volumes (green field, step-out etc.). Resource class follows PRMS. Note that all these can be customised if you want.

You can now put in comments associated with economic cut-offs and consolidation common risk.

5.30K

The tornado plot of the sensitivity to input variables has been changed slightly. See Sensitivity plots.

5.3

CO2 sequestration estimates can now be made.

You can now keep sets of prospects and consolidations in projects.

In Setup - user options you can choose always to load the last file or last project when you start the program.

In Prospects:

You can plot input variable distributions for multiple prospects, models and layers. See Input data plots.

You can "freeze" an existing evaluation, and start a new one from the same data. This enables you to see how it evolves with time, and you can plot pre- vs. post drill (or any other combination of evaluations) for one or more prospects. See Prospect evolution.

In gas condensate reservoirs, you can now calculate condensate recovery using a distribution for initial condensate yield and a liquids recovery factor. This is an alternative to using field average condensate yield with a single value for initial condensate yield. See Gas Condensate Reservoirs.

The model entry dialog is revised, and comes with a decision tree. Note, in particular, that you can make a model hierarchy.

There is a new risk table, so that you can summarise and edit the risking for multiple prospects.

There is a new template builder for single line prospect export to XL (for prospect inventories).

Net pay thickness maps can now be digitised and used for GRV calculations.

You can make a consolidation of the current loaded prospects.

In Consolidations:

The consolidation input screen is redesigned.

You can show a consolidation as a decision tree. If the prospects being consolidated have production forecasts, you can use the decision tree to show consolidated forecasts for individual outcomes.

On the File | Recent files menu of the main window there is an option Recent file list. This produces a list of all the most recently used files sorted by type (prospect, consolidation etc.). Double click a file name to load it.

There is a new (and dangerous) option to calculate a consolidation setting all underlying prospect risks to 100%. Click here; but make sure your CV is up to date before doing so.

5.27

Saturation-height functions can now be applied by layer; previously you could only define one function for all layers. The entry dialog has also been slightly modified so that the table and plot always reflects the current function.

Also in Sw-height, there is a new equation: Sw = a + b.log(h) + c.log(h)^2 + d.log(h)^3} / phi^e

5.26b3

Dependencies involving clipped distributions are now properly set up.

5.26

You can now make realizations (scenarios) of the P90, P50, P10 and mean reserve cases. See Realizations

When using column height, the program now checks the variables correctly and, in the case of an oil+gas model, does not moan if there is no gas-oil contact defined (although, having moaned, it made the correct calculation anyway).

A new type of dependency ("relational") is introduced. See Dependencies.

You can choose not to display recoverable volumes on the printed output. Select this option either from Setup | User options and go to the Results presentation tab; or in the prospect or consolidation window go to File | Print options where the choice can be made either in All options or by clicking In-place volumes only (this acts as a toggle so that the same menu item is used to switch back).

In the fluid correlations, the oil formation volume factor Bo (which should always be greater than 1.0) is now blanked out if the particular combination of input parameters lies outside the scope of the correlation. The scope of the correlations themselves has been widened.

5.25

In dual porosity systems the program will now detail the numerical split between primary and secondary volumes. This is the 1ary/2ary button on the summary dialog in the prospects section. You can also get printed output, either by doing a full printout, or by selecting the 1ary/2ary volumes checkbox in the Print | Pages option.

5.24

You can now show cross-plots and distributions of the inputs to a consolidation. See Graphs of input data.

Also in Consolidations:

In the input files screen you can show the input reserves as whole trap or company share (whole trap is now the default). Note that the setting in this dialog will control also the display on the printout.

The sampling has been improved.

You can do some simple administration tasks on groups (folders and subfolders) of files. See File Database Administration

5.23

You can now define a beta distribution using P90, mode and P10. To do this, click the [Style] button when entering the distribution.

Standard deviation is calculated for output distributions, and shown on the "More stats" dialog. To show SD's on printed output, go to Setup | Installation, make sure you are using summary sheet style 5 and tick the "Show output SD's" checkbox.

5.22c

Several bug fixes and improvements in Consolidation entry:

The [Plot] button now works (and shows the input distributions) and in the resulting plot you can see either risked or unrisked distributions.

You can show either whole trap or net-to-company input volumes (previously it was always net). This choice is also mirrored in the printed summaries.

You can sort the input variable table by right clicking in a column header to sort by the values in that column; right clicking twice reverses the order of the sort. This is a surprisingly useful facility. Note that the order of the input files is in principle irrelevant to the calculation but you may not get identical results since the random number usage may be different.

In the prospect ID section some entries in the "geological" section (for example, depth to crest, base column etc.) can be retrieved from data entered later. Come back to this page when you have completed the main data entry and click the [Retrieve] button.

The line colour in the spider sensitivity plots are correct.

Writing version 5.01 prospect files now works again.

5.22b

The "probability of achieving the mean" value now has two representations: unrisked and risked. The risked value is equal to the unrisked value multiplied by EPOS multiplied by phase chance.

5.22a

Bug fix: in an oil case with a gas cap, the probability of the gas cap was always taken to be 100% where the GRV model was either a single distribution or from area/thickness/depth. Similarly for a gas case with a less -than-100% chance of an oil rim, the chance was always set to 100%. This is now fixed.

When you opened a file, having several already open, the program would occasionally position itself at one of the previously opened ones. This is now fixed.

Filenames are no longer converted to lower case.

In XL export, carriage return/linefeeds are stripped from comments, which makes them more visible in XL.

When using dummies in consolidations, the GPOS for all phases in a dummy are linked.

Layers are now indicated on area-depth plots.

The mean value of variables is now shown in the variable list.

The effective distribution of a dependent variable is now shown in the tables.

5.21a/b/c

The decision (entry) of whether to use hydrocarbon contacts or spill point/degree of fill is now part of the GRV section. There is also a third option - column height. This allows you to enter a hydrocarbon column height rather than a contact or spill point depth.

You can now shade your graphs (both hardcopy and on the screen) by hydrocarbon type. See Results Presentation.

You can export data direct to XL (i.e. bypassing a macro file). See Exporting Data to XL Spreadsheets.

You may find that file sizes are bigger. This is because we have increased the resolution of the output data (more bins). With multi-model evaluations the results could be very smeared and even though the numbers were correct the visualization was poor.

When you have multiple models in a prospect, or more than one prospect loaded, you can copy variable distributions from the current prospect or model to others. Click the [Copy..] button in the variable entry dialog. For more details click here.

A new option "Calculate all" on the Calculate menu allows you to to recalculate all the currently loaded prospects. This is useful when you have used the "Apply distributions" feature (described above) to update distributions in lots of prospects.

In prospects, the entry of Variable Dependencies now allows you to see the statistics (P100, P50, P10 and mean) of the dependent variable. This is a useful reality check. The plotting of the dependency relations is also improved.

5.20h

In the case of prospects and consolidations with an economic cut-off, the risked mean was being calculated as technical success mean x EPOS (economic probability of success). This has now been changed to:

Risked mean = technical success mean volume x GPOS (geological probability of success).

There is a new risking scheme, scheme 10, which is similar to scheme 9. The layout of the entry dialogs for both schemes has been slightly altered.

You can select the printer to use from an item on the "File" menu of the first (main REP) window.

5.20f

There is a new layers option: unconformity traps. See Prospect Layers.

5.20e

The Pert distribution is now called the Beta in the input drop-down lists.

There was an error with the Pert distribution - now fixed - when the mode was very close to the maximum. This also caused the sensitivity plots to go blank.

5.20a-d

Minor bug fixes.

5.20

A new distribution has been added - the "Beta". It is defined by a minimum, mode and maximum. When symmetric, it looks like the normal distribution; when skewed, like the log-normal distribution. It avoids the pitfalls of the triangular shape, but does not extend beyond the defined maximum. There is information on the web, see for example www.riskamp.com/library/pertdistribution.php.