

SharpShooter Gold

IPM creation, editing and Office setup

Office administrator and survey specialist guide | 12 September 2026

What an IPM does

An Instrument Performance Model describes the errors associated with a survey tool and its operating conditions. The uncertainty engine applies those errors through the well's survey history. Anti-collision calculations then combine the two wells' uncertainties using a defined separation rule.

An IPM is only one input. The correct survey-tool depth intervals, starting uncertainty, magnetic inputs, confidence settings, surface margin and projection are also needed. A familiar tool name or an imported file does not establish that those inputs are correct.

Start with the survey provider

Ask the MWD or directional-survey provider's technical department for the approved model for the equipment and corrections actually being used. The rig contractor may need to obtain it from that provider. Ask for:

- The original .ipm file, full tool/model name, revision, approval status and issue date.
- The applicable error-model revision, survey method and operating limits.
- Required magnetic reference and survey corrections, and the depth intervals where each tool was used.
- Reference surveys and expected uncertainty/AC results, with the calculation settings needed to reproduce them.
- Permission for your company to use, edit if necessary, and share the file with its authorised field users.

ISCWSA publishes a common modelling framework and generic models [1]. A generic model still needs an appropriate, documented selection. Models supplied with another product are not automatically licensed for redistribution.

What works in the current Office release

Available in this update: Office approval, immutable model revisions, withdrawal records and company-specific Field downloads. New jobs check updates after Office sign-in. The live AC engine supports configured stationary fixed-platform IPMs, explicitly selected public MWD models and full covariance imports.

Each well needs its own inputs. A name match or downloaded model is insufficient: confirm its tool runs, full surface history or provider covariance, starting uncertainty, magnetic inputs and separation settings. Unsupported model terms remain unavailable with a stated reason.

■ Create or edit a model

1. Preserve the original

Keep the provider's original file and approval record unchanged. Work on a separate copy with a new revision name. Record the old and new model identifiers, the author, the reason for the change and the date. Do not overwrite the only copy used for a previous job.

2. Use a compatible model editor

Use your licensed survey software's IPM/error-model editor or ask the provider to make the change. SharpShooter's current IPM panel imports files; it is not yet a coefficient editor.

For a new model, start from a template that the provider permits you to use and that matches the survey method. A survey-error specialist must establish the error values and conditions from tool performance evidence. Do not build a production model by guessing coefficients or changing them to obtain a preferred SF.

3. Check the model fields

- **Identity:** tool name, model revision, provider, approval status and supported operating conditions.
- **Error terms:** each error's name, direction/vector, magnitude, units, weighting formula and propagation/tie-on category.
- **Dependencies:** intermediate values used by later formulas, and any inclination or operating limits.
- **Run behaviour:** which errors are independent, shared within a run, or correlated between runs or wells.

Keep units and propagation categories exactly as the model specification requires. Changing a label from Rev4 to Rev5 does not convert the equations.

4. Check the file and validate the result

Export as an actual text .ipm file in a supported format. Preserve delimiters and the provider's metadata. Check for duplicate term names within the same vector, inconsistent intermediate-term flags, and formulas that refer to undefined or later intermediate terms. Imported COMPASS IPMs can contain compatibility issues [2]; have the provider correct the model rather than silently repairing it in a field job.

Run the revised model against the provider's reference cases and appropriate published diagnostics. Cover vertical and inclined sections, tool/run transitions and the intended operating limits. Compare complete uncertainty matrices or ellipsoid axes, not SF alone. Record the test inputs, expected results, tolerances and outcome.

5. Obtain approval

Have the designated survey specialist approve the exact exported file before operational use. Retain the approval and test record with that revision. Renaming a file or marking it approved yourself is not technical validation.

■ Approve and distribute company IPMs

Publish the reviewed file

1. Open **Office connection**, choose the directional company's connection file and sign in with an Office account.
2. Click **Company IPMs**, then **Approve and publish IPM**. Select the exact approved .ipm file.
3. Enter the provider, revision and approval record, including applicability and validation evidence. Review the displayed SHA-256 fingerprint and confirm approval.
4. Publish. The server records the user, time, file hash and immutable revision. If another office user published first, refresh and review that revision before retrying.
5. Use **Withdraw selected IPM** with a reason or replacement when a model must no longer be used. Previous revisions remain in the server's audit history.

Office approval is a company decision; format acceptance is not engineering certification. Only Office accounts can publish or withdraw models. Field accounts receive the approved catalog for their own directional company.

Field checks and local libraries

Creating a new job requests an IPM update. If already signed in, Field checks Office and downloads changed approved files. Otherwise the job records that its check is pending; sign in through Office connection. **Check / download approved IPMs** also runs a manual check.

Downloads are verified before a new local library becomes active. Connection failures keep the previous snapshot. Separate directional companies have separate cached libraries. Withdrawn models are removed from new assignments; known withdrawals block affected pinned IPMs in live AC until reviewed.

Without an Office connection, use **Job settings > AC setup & IPM checks > Update IPM folder** for approved local files. Company-managed libraries are updated through Office connection instead.

Directional company means the drilling business. **Client (oil company)** means the company hiring it. Client wells are jobs on the directional company's server; they do not need separate hosts.

Update the whole IPM folder at once

Update IPM folder takes a folder or ZIP of .ipm files. After reading them it asks how to use them:

- **Overwrite all** - the IPM folder becomes exactly the new collection. Models that are not in the update are moved into a **replaced-date-time** folder beside it (nothing is deleted), and files that cannot be used are kept in **not-supported** with the reason.
- **Add and update only** - new and changed models come in and every other model stays.

Models marked Provisional or Beta load, and their status is shown in the summary; only a Withdrawn model is refused. An inclination range of 0 to 0 means every inclination.

Rows in a model are worked out in the order the file is written, so a value can carry from one survey to the next (a gyro's drift over running time) and a value can be set twice for two inclination ranges. A value the file never sets on a run is refused by name, never read as zero.

Gyro models (24 Sep): the gyrocompass terms now use the earth rate in the unit the file expects, and the azimuth they use is the true-north azimuth. Check one Provisional gyro model against the provider's own numbers before using it for live AC.

A few files still cannot be used and the summary says why - for example a tie-on code the file does not define, a row the file marks as not for use, or a blank vector column. Ask the provider for the current Rev 5 version of those models.

Configure and check a job's live AC

Assign each well's uncertainty inputs

1. Open **AC setup / missing inputs** from Job settings or AC Summary. Select As drilled, Original plan, Geosteering or the relevant offset.
2. Choose approved stationary IPMs, the public MWD model only when applicable, or a full one-sigma covariance export. IPM files are limited to 2 MB each; a job can pin up to 64 files.
3. For IPMs, use **Load assigned tools + local IPMs**, or import approved files and enter the tool runs in metres. **Assign tools from AC PDF** in Job settings can read the report's reference Survey Tool Program. Verify that it describes the actual tools used.
4. Supply full surface survey history, confirmed starting covariance, local gravity and this well's magnetic field. Imports and survey bearings are never automatically rotated. A downhole tie needs preceding history or a provider's full covariance profile.
5. Under **Separation settings**, missing evaluation/display sigma are read separately from labelled AC report entries. Review missing/conflicting values, the surface margin, the projection and each well's hole or casing size. SF is always centre distance ÷ MASD. Saved values remain editable. Confirm inputs and click OK.

Imported covariance columns are MD, NN, EE, VV, NE, NV and EV, in metres and square metres at one sigma. Full matrices are required; a semi-major radius alone is insufficient. Changing the survey geometry invalidates an imported profile.

Read the result and share reviewed setup

The 3D comparison and AC Summary show calculated SF and between-ellipse distance at the selected survey/closest offset depths. Show ellipse draws oriented ellipsoids from full covariance. Original report values stay separately labelled at their original depths. Missing inputs leave calculated fields unavailable and identify the cause.

Jobs pin their exact IPM files and runs. Downloading a newer library does not silently replace them. Review a model change in AC setup before saving it. Floating-platform, gyro and unsupported formula sets require a supported provider covariance export. Supported diagnostic tests do not establish universal report equivalence or certify field conditions.

Office can publish per-job inputs through **Office connection > Publish AC setup**. Field reviews and applies them with **Pull AC setup from Office**. The source well, survey geometry and references must match. Receiving incomplete inputs still leaves affected calculations unavailable.

The encrypted server backup includes published IPMs, AC setup revisions and approval history. Keep provider originals and separate standalone libraries backed up too. A real office-to-field VPN connection still needs deployment testing with the company's IT team.

References and scope

[1] ISCWSA, **Error Model Documentation**, model definitions and diagnostic data: <https://www.iscwsa.net/error-model-documentation/>

[2] Published notes from other directional software on reading COMPASS IPM files, used for the file compatibility checks.

The SharpShooter steps were checked against the current Office workspace and server source on 12 September 2026. This guide contains no vendor model files or copied vendor manual illustrations. COMPASS and ISCWSA references identify relevant formats or sources; they do not imply endorsement or certification.