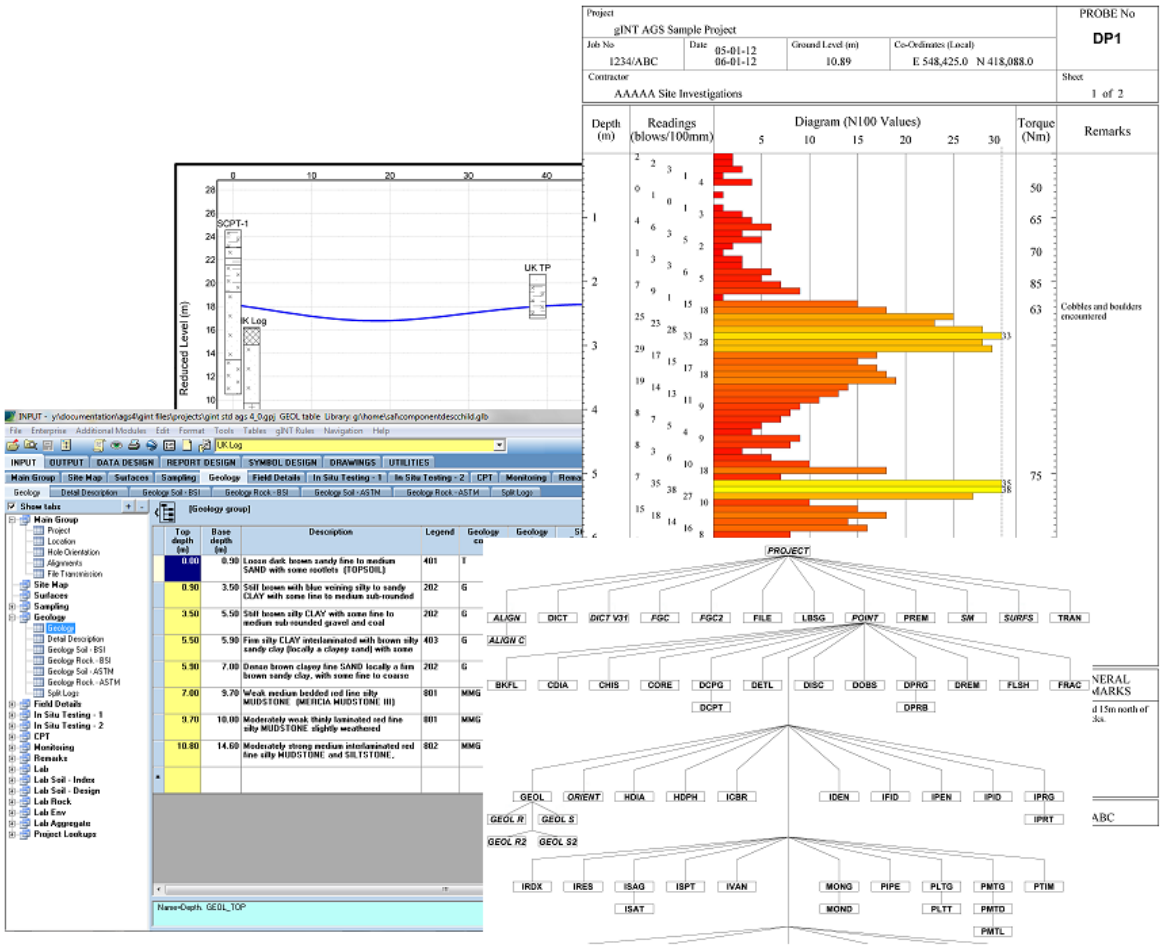
gINT V8i User Guide

File Checking Program for AGS Version 3 and 4



The information in this publication is subject to change without notice and does not represent a commitment on the part of Bentley. The software described in this document is furnished under a license agreement or nondisclosure agreement. The software must be used or copied only in accordance with the terms of the agreement.

Bentley Systems Inc.
Corporate Headquarters
685 Stockton Drive
Exton, PA 19341, United States

Web Site: http://www.bentley.com/en-US/Products/gINT/
Sales and General Support: http://www.bentley.com/en-US/Corporate/Contact+Us/

Contents

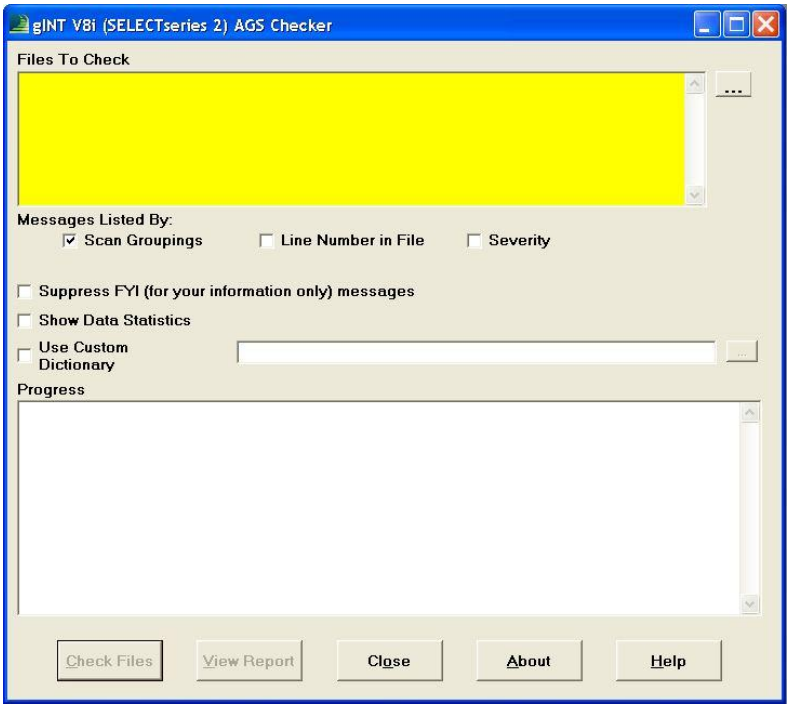
AGS Data Checker

Included with gINT version 6 and later is a program to check AGS version 3 and 4 files. It can be accessed within the program in the Input application via:

- File ➔ AGS Files ➔ Check AGS Files
- File ➔ AGS Files ➔ Import from AGS File. Mark the "Check file before import" check box.
- File:AGS Files ➔ Export to AGS File. Mark the "Check file after export" check box.

The checker is a stand-alone program so it can also be accessed outside of gINT by anyone. You do not have to have a gINT license.

Following is the main screen of the gINT AGS Checker program:



Click on the browse button ... right of the Files To Check field to select the AGS file or files that you wish to check. If you have files in multiple folders, select all the desired files from one folder and click the Open button in the file browser dialog. Then relaunch the browser and select the desired files from the second folder and click Open. The new files will be appended to the first set. Continue this process to select as many files as desired.

The File To Check text box is editable so you can remove files using text editing tools.

On selecting any file, the Check Files button at the lower left will become enabled. Click on it to initiate the process. Messages will be written to the Progress field. When completed, the View Report button at the bottom of the dialog will become enabled. Click on this button to save the messages to a file and view it. You can also view the messages within the Progress field.

Clicking the Help button opens this pdf document.

Following is a sample message log generated by checking an AGS file:

```
09/01/2009 9:22:50 AM (2 files)
ERROR = Broke a specified AGS version 3 rule.
WARNING = Condition that could compromise data quality.
FYI = For Your Information only.
      Unnecessary or redundant data or missing, non-critical, descriptive data.
**************************************

File:  c:\data\ags files\testfile.ags (1 of 2)
Date:  14/10/2008 10:39:24 AM
Size:  7,910 bytes
Number of Lines:  147

SUMMARY:  9 total errors or warnings or informational messages

Parsing Structure and Data   4 errors or warnings or informational messages
  ERROR: Line 2 - group headers must begin with an "*".
  ERROR: Line 24 - '*SAMP_TIME""*GEOL_STAT' - field has internal quote(s).
  ERROR: Line 25 - number of units does not match the number of headers.
  ERROR: Line 26 - does not have the same number of fields as the number of
headers

  FYI: Line 122 - No data found in the CNMT group.

Check of the DICT group (Rule 21)   1 error or warning or informational message
  WARNING: Line 131 - Variable CLSS_TVAN in group CLSS has no description in the
DICT group.

File codes check (Rule 24)   1 error or warning or informational message
  ERROR: There were FILE_FSET data but no FILE group was found (Rule 24).
FILE_FSET data in the following lines:
4, 8, 9, 26, 27, 28

Units check (Rule 18b)   1 error or warning or informational message
  ERROR: No UNIT group was found

Contaminant Codes Check (Rule 25)   1 error or warning or informational message
  FYI: There was a CODE group defined but no CNMT data.

**************************************
```

There are three types of messages that will be generated. An error is generated when some part of the file breaks a specified AGS rule. Parts of the file that generate warnings do not break a rule but should be looked at more closely. The informational messages (FYI) indicate non-critical inconsistencies or unnecessary portions of the file.

The generated messages are shown by different categories of checking, for example, overall structure, data relationships, abbreviations group, etc. These are called the "scan groups". This is the default format for listing messages. You can also list by message severity (errors, then warnings, then FYIs) or by line number in the file. Any one, two, or all three listings can be specified. At least one type must be specified.

Some messages do not have line numbers. They refer to some overall condition. These are placed at the top of the line number sort list.

If there are less than 10 messages in a file, the specified message listings are ignored and the messages are shown by scan group only.

Information only messages can be suppressed by marking the "Suppress FYI messages" check box.

The Show Data Statistics option reports the following:

- Number of records in each group with data.
- Groups with no data or standard AGS groups missing from file.
- Number of holes of each type with total drilling length.
- Number of samples of each type.
- Site Geometry: Minimum and maximum for local and national east, north, and ground surface level.
- Number of Index tests in CLSS group (does not apply to AGS4)
- Holes that have no data in the GEOL group.
- Holes that have no data in the SAMP group.

The Use Custom Dictionary option allows you to select a custom dictionary.

Click on the browse button  to the right of the Use Custom Dictionary field to select the dictionary file you want to use. See the Creating a Custom Dictionary section below for further details.

The About button at the lower right shows the program version and copyright information.

Command Line Options

When running the AGS Checker from another program, you can append command line options to affect its behavior. The syntax for doing so is as follows:

```
<ags checker path>\agschecker.exe <option 1> <option 2>…
```

For example:

```
c:\program files\bentley\gint v8i\bin\agschecker.exe /suppresspw
```

Following are the options.

AGS File Name

You can just append the name of an AGS file you wish to check. For example:

```
c:\program files\bentley\gint v8i\bin\agschecker.exe c:\temp\my ags file.ags
```

This will also run the checking code with the default properties. If you use this option in conjunction with other options, this option must be first.

Settings File

(Available with Version 08.30.04.244 or later)

You can create a file that specifies all the property settings. This must be an ASCII file of the following structure:

```
FilesToCheck=<ARRAY> (required)
file folder and name 1
file folder and name 2
...
</ARRAY>
MesgList_ScanGroupings=-1/0 or True/False (default = -1/True)
MesgList_LineNumberInFile=-1/0 (default = 0/False)
MesgList_Severity=-1/0 (default = 0/False)
SuppressFYIMesgs=-1/0 (default = 0/False)
ShowDataStats=-1/0 (default = 0/False)
CustomDictionary= (default = blank)
LogFile= (default = blank)
```

Only the FilesToCheck property is required. The <ARRAY> </ARRAY> structure is required even if there is only one file specified.

If a valid LogFile is provided, the checking log will be written to that file and the program will terminate after completion of all the checking.

Examples:

```
FilesToCheck=<ARRAY>
c:\temp\xyz.ags
c:\temp\abc.ags
```

```
c:\my files\mno.ags
</ARRAY>
```

This will launch the program with the list of files to check and defaults for all other properties, runs the checking, and leaves the program running.

```
FilesToCheck=<ARRAY>
c:\temp\xyz.ags
c:\data\abc.ags
c:\my files\mno.ags
</ARRAY>
ShowDataStats=-1
LogFile="c:\temp\ags checker log file.txt"
```

This will run the checking of the specified files, generate the statistics for each file, send the checking log to the specified file, and terminate the program.

Suppress ProjectWise

If you have Bentley's ProjectWise on your system and you do not wish to use the ProjectWise facilities in the AGS Checker session which will be run via a command line, you can suppress ProjectWise support to speed up execution.

```
c:\program files\bentley\gint v8i\bin\agschecker.exe /suppresspw
```

If ProjectWise is not installed on your system, this option does no harm.

When running the AGS Checker from within gINT, the checker program uses whatever option is set for ProjectWise for gINT (see the File ➔ System Properties dialog, "General" tab – Suppress ProjectWise property).

Using Multiple Options

Any combination of options can be used but if the AGS File Name option is used it must be first. Note that it would be redundant to use the AGS File Name option with the Settings File option since that latter contains the AGS file or files to be checked. If you do use the two, the AGS File Name option will be ignored.

Referential Integrity of Data in User-Defined Groups

The checker automatically checks to ensure that there are no “orphan” records, that is, child records without corresponding parents. For example, a SAMP record with a HOLE_ID of “BH-6” when “BH-6” does not exist in the HOLE group. These checks ensure “referential integrity”.

For referential integrity to be checked the program needs to know the relationships between the groups, that is, it must know the parent group of each child group. For example, the HOLE group is the parent of the SAMP group and therefore each record in the SAMP group must have a corresponding record in the HOLE group.

For the AGS groups listed in the AGS documentation for 3.1 (including “?” groups), the program knows these relationships. For other user-defined groups, the program relies on the definition of those groups in the DICT group of the file. If the file is created with the AGS 3.1 structure, the ?DICT_PGRP variable holds the name of the user-defined group’s parent. If this is missing, or the file is AGS 3.0 without this variable, the program determines the possible group or groups that could be a parent of each user-defined group.

It is possible that multiple groups could be the parent of a user-defined group. In this case, the program puts up the following dialog and you must tell the program the parent group:

In this example, the group “?XXXX” did not have its parent listed in the DICT group. This group has the same key structure as all AGS lab testing groups. Therefore, the parent could be SAMP (the parent of all lab testing groups) or any of the “general” lab testing groups. The former would be a one-to-many relationship (potentially many ?XXXX records for each SAMP parent record) and the latter would be a one-to-one relationship (a maximum of one ?XXXX record for each parent record). The one-to-many relationship list in the above example has only the SAMP group, the one-to-one list has many options.

To specify the appropriate parent, select it from the appropriate list and make sure the option button right of the list is marked. Then click the OK button.

If there are only one-to-many or only one-to-one parents, you will only see one of the lists above and the option buttons will not be shown since there is only one choice.

If the program is able to narrow down the possible parents to just one group, you will not see the above dialog and the checking will proceed automatically.

Support for the RTA AGS Structure

The Roads and Traffic Authority of New South Wales (Australia) has a formal variant of the AGS 3.1 structure. If the PROJ_AGS field in the PROJ table has the string " RTA " embedded in it (currently the official version is "3.1 RTA 1.0"), the checker has the following behavior different from a non-RTA file:

- Rule 24 (File names shall not contain more than 8 characters in the main body and not more than 3 characters in the extension.) is ignored, that is, long file names will not be flagged as errors in an RTA file.
- The parent table of all standard AGS lab testing groups, except GRAD is CLSS, not SAMP. These groups are CBRG, CMPG, CNMT, CONG, MCVG, PTST, RELD, ROCK, SHBG, SUCT, TNPC, and TRIG.
- The parent table of the AGS GRAD group is ?GRAG, not SAMP.
- The ?STCI group does not have HOLE_ID as the first variable and this is not flagged as an error (Rule 6a) for this group only.

Support for the New Zealand AGS Structure

New Zealand has a formal variant of the AGS 3.1 structure. If the PROJ_AGS field in the PROJ table has the string " NZ" embedded in it (currently the official version is "3.2 NZ"), the checker has the following behavior different from a non-RTA file:

- Rule 24 (File names shall not contain more than 8 characters in the main body and not more than 3 characters in the extension.) is ignored, that is, long file names will not be flagged as errors in an NZ file.
- The parent table of all standard AGS lab testing groups is CLSS, not SAMP. These groups are CBRG, CMPG, CNMT, CONG, MCVG, PTST, RELD, SHBG, SUCT, TNPC, and TRIG.

Creating a Custom Dictionary

Overview

With the AGS data interchange format you cannot determine everything that is needed to understand the data by inspecting an AGS file. For example, table relations, key fields, required fields. The AGS checker has information that fully describes the format so that checking can occur. Information currently held describes AGS 3, AGS 4, RTA 3, and New Zealand 3. If you require checking of another version of the AGS format, you can create your own custom dictionary.

Another reason you may wish to create a custom dictionary is that you require certain rules for your data beyond that required by AGS, for example, you might want to require that certain fields must have values, that is, that they are required, or that certain groups be in the file and have data.

The AGS 4 information used by this checker is stored in the file AGS4 DICT.GAS and is located in the same folder as the AGSChecker.EXE. You can use this as an example.

Any lines that start with an apostrophe (‘) are comments. Feel free to insert as many comment lines as desired to document your work.

Structure of a Custom Dictionary

FILE SECTION	DESCRIPTION
‘gINT Schema for AGS	File header. Must be the first line. The first character is an apostrophe.
Name of the group which holds the borehole top-level information	E.g., AGS 3 = HOLE, AGS 4 = LOCA
Unique identifier field name for the boreholes.	E.g., AGS 3 = HOLE_ID, AGS 4 = LOCA_ID
List of required groups	E.g.: PROJ ABBR
List of required fields in GROUP.FIELD syntax.	E.g.: ABBR.ABBR_HDNG TRAN.TRAN_DATE

FILE SECTION	DESCRIPTION
Each group in the following 5 lines:	E.g.,
Group Name	BKFL
Parent,Number of Key fields	LOCA,2
Headings	LOCA_ID,BKFL_TOP,BKFL_BASE,BKFL_DESC,BKFL_LEG,…
Units	,m,m,,,yyyy-mm-dd,,
Types	ID,2DP,2DP,X,PA,DT,X,X

Data Validation

This program can only check compliance with the AGS structure and some aspects of internal consistency. It does not have data rules beyond those of the AGS. If you have gINT you can implement three types of your own data rules. These will be enforced during the import process and data that break them will be documented on the import log shown at the end of the import process.

The first type of data rules you can implement in gINT is the data type. You can set the type of fields to text (up to 255 characters), memo (up to 64KB characters), various numeric types, date/time, etc. If a field is specified as a number and the data contains text, that data will not be imported and a descriptive message will be added to the import log. This capability is available in all Windows versions of the program (version 4 and later).

If you have gINT version 6 or later you can also set minimum and maximum values for numeric fields using the "Field Rules" property of fields. If a maximum of 100 is specified and the source file has values above 100, those data will not be imported and the errors will be logged.

Also with gINT version 6 or later is the ability to write VBA-like (Visual Basic for Applications) code associated with any or all tables in your target database. These allow you to write complex database rules that not only validate the data but can also perform calculations to generate reduced data of any type, for example, friction ratio from static cone tip resistance and side friction or corrected SPT N values from the blow counts, depth, water level, and any other relevant factors. These rules are executed whether the data are typed into the gINT Input screens or imported. Within gINT execute the Help ➔ Manuals command and then open “gint_rules_code_V8i.pdf”.