

Frequently Asked Questions

Directive 080: Well Logging

Updated July 2021

General

Q1. What are the minimum logging requirements for a single vertical or deviated well?

A1. See sections 3.3.1 and 4.3.1 of *Directive 080: Well Logging* for the minimum logging requirements.

A licensee may apply for substitution to or relief from these requirements where special circumstances warrant as per section 6 of *Directive 080*.

Q2. What are the minimum logging requirements for a single horizontal well?

A2. See sections 3.3.1 and 5.3(11) of *Directive 080* for the minimum logging requirements.

A licensee may apply for substitution to or relief from these requirements where special circumstances warrant as per section 6 of *Directive 080*.

Q3. What are the minimum logging requirements for a multiwell pad?

A3. See sections 3.3.2, 4.3.2, 5.3(11), and 5.3(12) of *Directive 080* for the minimum logging requirements.

A licensee may apply for substitution to or relief from these requirements where special circumstances warrant as per section 6 of *Directive 080*.

Q4. Under what circumstances will a well logging waiver be granted for below the surface casing interval?

A4. Section 6.1 describes the conditions under which a waiver will be granted for technical or operational circumstances.

Section 6.2 describes how to apply for a waiver based on pre-existing offset well log data.

Note: Although logging waivers may be granted on the full suite of logs for a vertical or deviated well on a multiwell pad, a gamma ray log from total depth to base surface casing on the vertical or deviated well will still be required.

Q5. Under what circumstances will a logging waiver be granted for the surface casing interval?

A5. Section 6.1 describes the conditions under which a waiver will be granted for technical or operational circumstances.

Q6. Do I need to submit a logging waiver request for the surface casing interval for a multiwell pad if requirement 4 in section 3.3.2 is fulfilled by logging the surface casing interval from a vertical observation well, licensed by the AER, on the same pad or surface facility lease?

A6. No.

Q7. What if I want to use logging services that are not listed in section 4.3.3 to determine the lithology, fluid, and porosity of the strata?

A7. A request for substitution of acceptable well log types may be submitted to the AER. See section 4.3.6 for details.

Q8. How does the AER evaluate logging waiver requests under section 6.2?

A8. AER geological staff review the request and assess the suitability, quality, and age of offset well logging data and the local geological setting, including the distribution, heterogeneity, and continuity of the strata of the interval for which the logging waiver is requested.

Well logging waivers are granted only when sufficient existing offset well log data are available to confidently interpret the lithology, fluid, and porosity of the strata at the subject well location. They are not granted based on an arbitrary distance between the subject well and the offset well(s).

Reporting and Submission of Well Logs

Q9. Are submitted well logs disseminated to the public?

A9. Nonconfidential logs are available to the public for purchase. Confidential logs are not disseminated to the public.

Q10. How do I submit well logs?

A10. Through the designated information submission system, which is listed on the [Directive 080 landing page](#).

Q11. Do paper copies of well logs need to be submitted?

A11. No.

Q12. What are the submission format requirements for the well log data?

A12. Well logs (including FMI and spinner logs) must be submitted as a TIFF, LAS, or PDF file.

Q13. How do I identify a log that is a corrected resubmission of a deficient log?

A13. Put the AER-assigned reference number (e.g., R0012345) in the “other information” block of the log’s file name. See section 7.4(22) for an example.

Q14. What is the maximum acceptable file name length?

A14. The maximum is 256 characters, including the extension. See section 7.3 for details.

Q15. Should I submit both TIFF and PDF formats for a single raster log?

A15. No. Each raster well log is to be submitted in either TIFF or PDF format, but not both. Select the most appropriate format for the type of well log being submitted.

There is a difference in page layout. If you submit a log in TIFF, a single page has no length or width limitation, and one image can represent an individual well log. However, there must be no gaps or blank spaces between pages, and the scale must be vertically aligned. If a log is submitted in PDF, a single page cannot be more than 200 inches long. However, a PDF may contain multiple pages.

Q16. How many characters are required for a complete unique well identifier (UWI)?

A16. A log header is required to contain a minimum 14 character UWI. The survey code (SS), which is assumed to be 1, and the leading zero in the event sequence (ES) can be excluded. Refer to *Directive 059: Well Drilling and Completion Data Filling Requirements* for details. The example below outlines a UWI, which would be written out as 02/11-36-006-05W4/2.

Example:

SS	LE	LSD	SC	TWP	RG	W	M	ES
1	02	11	36	006	05	W	4	02

Q17. When submitting borehole image logs or formation microimager (FMI) logs, what level of processing/ interpretation should be submitted?

A17. The static and dynamic processed images should be submitted for borehole image or FMI logs in both 1:10 and 1:240 scales. Annotations and interpretations are optional.

Q18. Do field copies or working-copy logs have to be submitted?

A18. No. We only require final copy logs.

Q19. Do cross-section logs for multiple wells in a single log have to be submitted?

A19. No.

Q20. Do both LAS and raster logs have to be submitted?

A20. Yes, both LAS and raster logs must be submitted.

Q21. Do core gamma-ray logs have to be submitted?

A21. No.

Q22. What happens if a licensee submits an incomplete or invalid well log?

A22. The licensee is responsible for submitting complete and accurate raster and LAS data. If the licensee fails to comply, the AER will respond in accordance with its [compliance assurance program](#) and the licensee will have to submit a valid replacement log. See sections 7.6 and 7.7 for data requirements.

Q23. How can I verify if the ASCII standard (LAS) log file meets *Directive 080* and Canadian Well Logging Society standards?

A23. You can use the table below, which provides a summary from *Directive 080* and LAS versions 2.0 and 3.0 of what is and is not permitted in an LAS file.

Section	Validation description
<p>General formatting</p>	<p>Tabs cannot be used; only spaces are permitted</p> <p>The comment indicator (#) cannot start with spaces</p> <p>To identify a section, a tilde (~) must be inserted as the first character, e.g., ~Well</p> <p>Blank lines are not permitted</p> <p>The number of characters before a line feed cannot exceed 5000</p> <p>File size cannot be greater than 250 MB</p> <p>The file must have at minimum version, well, curve, and ASCII sections</p> <p>The file must start with version and well sections, and end with the ASCII section</p> <p>The ASCII section must always be the last section in a file</p> <p>In LAS version 2.0, sections cannot be defined more than once in a file</p> <p>In LAS version 3.0, sections can be defined more than once in a file, but must follow 3.0 index suffixes</p> <p>In LAS version 2.0, the parameter section and the other section are optional</p> <p>In LAS version 3.0, the other section is not valid</p> <p>In LAS version 3.0, the parameter section and the user-defined data sections are optional</p> <p>MD logs must have a curve code of 001</p> <p>TVD logs must have curve code of 960</p> <p>Three-line delimiters must be used for version, well, curve, and parameter sections. Delimiters are the dot, space, and colon. The mnemonic values are read from after the first dot to before the colon. See example.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">#MNE.M UNIT DATA :DESCRIPTION OF MNE</p> </div>
<p>Version section (~Version)</p>	<p>Version section cannot be defined more than once</p> <p>VERS mnemonic must be present with a value of 2.0 or 3.0</p> <p>WRAP mnemonic must be present</p> <p>In version 3.0, WRAP value must state NO</p> <p>In version 3.0, DLM mnemonic must be present and valid</p>

Section	Validation description
Well section (~Well)	<p>Well section cannot be defined more than once</p> <p>First three mnemonics must be STRT, STOP, and STEP</p> <p>DEPTH, STRT, STOP, and STEP values must all have the same unit of measure (metric or time)</p> <p>STRT value must match the first depth value in ASCII section</p> <p>STOP value must match the last depth value in ASCII section</p> <p>STOP value cannot be greater than the total depth of the well</p> <p>STEP value must be equal to the difference of every depth in the ASCII section</p> <p>STEP value of zero indicates an inconsistency in the ASCII section</p> <p>One of the two following equations must be true:</p> <ul style="list-style-type: none"> a. $STRT/STEP = \text{whole number}$ AND $STOP/STEP = \text{whole number}$ b. $(STRT-STOP) / STEP = \text{whole number}$ <p>NULL value must equal one of the following:</p> <ul style="list-style-type: none"> a. -99999 b. -9999 c. -9999.25 d. -999.25 e. -999 f. -99.99 <p>DATE mnemonic must exist in the well section with a valid date</p> <p>DATE mnemonic is defined as the run date / end log date</p> <p>DATE format must be defined in the mnemonic description, i.e. DD/MM/YYYY</p> <p>KB or GL mnemonic must be present</p> <p>KB or GL value must be present and valid</p> <p>UWI mnemonic must be present</p> <p>UWI value must be present and valid</p> <p>LIC mnemonic must be present</p> <p>LIC value must be present and valid</p> <p>UWI and LIC needs to match</p> <p>SRVC mnemonic must be present</p> <p>SRVC value must be present</p>
Curve section (~Curve)	<p>In version 3.0, curve section can be defined as Curve or LOG_Definition</p> <p>DEPT or DEPTH must be the first mnemonic</p> <p>TIME or ETIM must be the first mnemonic, if log is time based</p> <p>MD logs must be indicated by DEPTH value of 001</p> <p>TVD logs must be indicated by DEPTH value of 960</p> <p>DEPTH value can only be MD or TVD; it cannot be both</p> <p>The number of mnemonics in the curve section must equal the number of rows in the ASCII section</p>
ASCII section (~ASCII)	<p>ASCII section must be the last section of the file</p> <p>In version 3.0, ASCII can be defined as ASCII or LOG_Data</p> <p>DEPT or DEPTH data must be the first column in the ASCII section</p> <p>TIME or ETIM data must be the first column in the ASCII section, if the log is time based</p>