

# Hydraulic Fracture Data Comma Separated Value (CSV) Files How-to Guide

July 2017  
Version 1.6

## Table of Revisions

The Commission is committed to the continuous improvement of its documentation. The table below summarizes revisions to the Hydraulic Fracture Comma Separated Values (CSV) Files How-to Guide, based on changes to legislation or processes, or input from stakeholders.

Revisions are posted to the Commission's Documents Section of the Industry Zone at the beginning of every month and are effective one month after posting, unless otherwise specified. CSV files submitted before the effective date will be accepted for review by the Commission. Submissions received on or after the effective date must meet the revised requirements or they will not be accepted for review by the Commission.

For more information about the Commission's monthly revisions, and for details of this month's revisions, please visit the Documentation Section of the Commission's website.

Stakeholders who would like to provide input or feedback on Commission documentation may send comments to [OGC.Systems@bcogc.ca](mailto:OGC.Systems@bcogc.ca).

Posted Date	Effective Date	Chapter	Summary of Revision(s)
April 11, 2013	June 1, 2013	-	This is a new document provided to guide users through the Commission's processes and procedures associated with hydraulic fracture electronic submissions. Users are encouraged to review the document in full.
December 6, 2013	January 1, 2014	4.1	Added content to the Hydraulic Fracture Data Submission section.
April 2, 2015	April 20, 2015	Various	This document has been updated to reflect the implementation of the Commission's eSubmission Portal. Readers are encouraged to review this document in full. Please see INDB 2015-06 and the Commission's BTS webpage for more information.
July 8, 2015	August 1, 2015	2	Updated description elements to clarify input requirements. Added PERF. Csv file requirements for cemented and uncemented casing hole.
March 28, 2017	March 29, 2017	1.0	Updated submission guidance. For more information, refer to <a href="#">INDB 2017-07</a> on the Commission's website.
June 7, 2017	July 1, 2017	Various	Various edits have been made to this document. Users are encouraged to review in full.
July 7, 2017	August 1, 2017	Table 1	Changed CO <sup>2</sup> to CO <sub>2</sub> .

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## 1.0 Introduction

The BC Oil and Gas Commission (Commission) utilizes an online system for reporting hydraulic fracturing data summaries in comma-separated value files (.csv). Timely, comprehensive information on well fracture stimulation operations enhances reporting and communicates field technological improvements. Over 80 per cent of new wells drilled in British Columbia receive hydraulic fracture stimulation, a key component to the development of unconventional gas resources.

Hydraulic fracture data is required for each fracture stimulation stage in a wellbore completion. The individual fields required are outlined in Section 3 of this document. Cased and cemented holes require the submission of associated data identifying basic information on perforation intervals, burst discs, frac ports and frac sleeves. Data is submitted through the Commission's [eSubmission Portal](#).

In addition to the .csv file(s), it remains a requirement to submit a complete report of all well completion and workover operations, as per [Section 36](#) of the Drilling and Production Regulation. Well completion and workover reports are to be submitted to the Commission in portable document format (.pdf) via the [eSubmission Portal](#). These reports contain additional information necessary to maintain current and accurate records for public dissemination, detailed analysis and report auditing.

## 2.0 Creating Hydraulic Fracture Data .csv files

### Download a Template

Prior to creating and loading the FRAC or PERF .csv file, download the [frac template](#) or the [perf template](#). The templates are located on the Commission's website under the [All Documents](#) section of the Industry Zone.

### 2.1 Creating FRAC Submission .csv file

#### File Naming

To facilitate standard identification of submitted data, files must have a file naming convention. Rename the template file using the following naming convention:

WANUM\_FRAC\_YYYYMMDD\_OPTIONAL.csv

- WANUM must be five digits, including leading zeros. This is the Well Permit Number.
- Date entered should reflect the last date of operations.
- Example : 30207\_FRAC\_2013SEP25\_InitialCompletion.csv

### Complete the Header Information

Box A1 in the .csv file should contain the letters, space and symbol “WA #”

Box B1 in the .csv file should contain the actual WA Number. This number will be compared to the WA Number in the matching Notice of Operation. See Figure 1 for formatting.

Box C1 can contain any well descriptor information you want, such as well name, UWI or other internal company well identifier. This box is not edited and is for operator use only.

	A	B	C	D	E	F	G	H
1	WA #	24196						
2	FRAC Stage #	Base Fluid	Viscosity/Gel Type	Energizer	Energizer Type	FRAC Date Year (YYYY)	FRAC Date Month (Mon)	FRAC Date Day (DD)
3	1	Fresh Water	Slickwater	Energized	CO2	2011	Jan	16
4	2	Saline water	Linear	Foam	N2	2011	Jan	15
5	3	Oil	Crosslinked	None	CO2/N2	2011	Feb	16
6	4	Acid	None	Energized	None	2011	Feb	16
7	5	CO2	Slickwater	Foam	CO2	2011	Mar	16
8	6	Propane	Linear	None	N2	2011	Mar	16
9	7	Surfactant	Crosslinked	Energized	CO2/N2	2011	Apr	16
10	8	Other	None	Foam	None	2011	Apr	16
11								

Figure 1 Example of a fracture data .csv file displayed in Microsoft Excel

### Complete the FRAC Template

Complete the information in the .csv file, including the fields listed below, ensuring the following:

- There is a FRAC Stage # for each interval and/or stimulation attempt. When reporting stages, the single digit values are used first (i.e. 1, 2, 3). Subsequent attempts within that stage are assigned an additional alpha value (i.e. 1a, 1b, 1c).
- Where fracture sleeves and/or ports are used, all stages within the assembly must be reported. Where zones are not completed, report the results as zeros.
- Required fields are mandatory for a successful file upload in the eSubmission Portal. Data for all other fields must be included if collected during operations.
- Number fields cannot exceed those listed below. Number (3,1) indicates that you can enter up to three (3) digits including one (1) digit as a decimal. Example: 99.9.
- Character fields do not exceed those listed below. CHARACTER (30) indicates a user can enter up to 30 characters.
- Edits in Table 1 below must be followed.

Table 1 FRAC.csv Formats and Business Rules

FRAC Fields	Format	Required.	Max Length	Cell	Description	Edits
WA Num	CHARACTER (5)	YES		B1	Well Permit number - Examples (789, 0789 and 00789 are the same WA), (3456 and 03456 are the same), 24567	Can be up to five digits.
FRAC Stage #	CHARACTER (5)	YES		A3	Frac stage number - can have values such as 1, 2, 3, ...19, 20 or 1A, 5A, 5B, 5C or 1TOE.	Alpha numeric allowed. Cannot be zero.
Base Fluid	CHARACTER(30)	YES		B3	1st of 4 fields defining frac type	List of Values Allowed = Fresh water, Saline water, Oil, Acid, CO <sub>2</sub> , Propane, Surfactant, Other. See definitions below.
Viscosity/Gel Type	CHARACTER(30)	YES		C3	2nd of 4 fields defining frac type	List of Values Allowed = Slickwater, Linear, Crosslinked, None. See definitions below.
Energizer	CHARACTER(30)	YES		D3	3rd of 4 fields defining frac type	List Of Values Allowed = Energized, Foam, None. See definitions below.
Energizer Type	CHARACTER(30)	YES		E3	4th of 4 fields defining frac type	List of Values Allowed = CO <sub>2</sub> , N <sub>2</sub> , CO <sub>2</sub> /N <sub>2</sub> , None.
FRAC Date Year (YYYY)	CHARACTER (4)	YES		F3		Format Allowed = YYYY
FRAC Date Month (Mon)	CHARACTER (3)	YES		G3		Format Allowed = MON
FRAC Date Day (DD)	CHARACTER (2)	YES		H3		Format Allowed = DD All three date components must concatenate into a valid date. Date cannot be in the future.

FRAC Fields	Format	Required.	Max Length	Cell	Description	Edits
Plug Back Total Depth (mKB)	NUMBER(6,1)	YES	99999.9	I3	The depth at which the frac stage is isolated from those below it. For the first stage, this is TD or PBDT in mKB and for subsequent stages this is the location of last bridge plug, sand plug, swell packer, ball seat, etc, below the interval fractured in mKB.	PBDT must be equal to or deeper than the FRAC Base Depth.
FRAC Top Depth (mKB)	NUMBER(7,1)	YES	999999.9	J3		Fracture top depth must be less than fracture base depth.
FRAC Base Depth (mKB)	NUMBER(7,1)	YES	999999.9	K3		
Acid Spearhead Amount (m <sup>3</sup> )	NUMBER(4,1)		999.9	L3	Volume of acid in m <sup>3</sup> , blank if none	
Acid Type	CHARACTER(40)			M3	Type of acid used. Example: 15% HCl; blank if none	Acid type must be entered if acid spearhead amount is entered.
Breakdown Pressure (MPa)	NUMBER(5,2)		999.99	N3	Formation break down pressure, in MPa	
Instantaneous Shut-In Pressure (MPa)	NUMBER(5,2)		999.99	O3	Instantaneous Shut-in Pressure in MPa	
Max Treating Pressure (MPa)	NUMBER(5,2)		999.99	P3	Maximum Treating Pressure in MPa	
Avg Treating Pressure (MPa)	NUMBER(5,2)		999.99	Q3	Average Treating Pressure in MPa	Average treating pressure must be less than maximum treating pressure.
Avg Rate (m <sup>3</sup> /min)	NUMBER(3,1)		99.9	R3	Average Treating Rate in m <sup>3</sup> /min	

FRAC Fields	Format	Required.	Max Length	Cell	Description	Edits
FRAC Gradient (kPa/m)	NUMBER(7,2)		99999.99	S3	Fracture Gradient - expected calculation method for industry is (ISIP(kPa) + Hydrostatic Head (kPa))/ Depth (m)	
Total Fluid Pumped (m <sup>3</sup> )	NUMBER(6,1)		99999.9	T3	Total Fluid Pumped into formation in m3 for the frac stage, including acid and additives (not including CO <sub>2</sub> volumes)	
Total CO <sub>2</sub> Pumped (m3)	NUMBER(4,1)		999.9	U3		
Total N <sub>2</sub> Pumped (scm)	NUMBER(6,1)		999999.9	V3		
Radioactive Tracer Used (Y/N)	CHARACTER (1)			W3		List of Values Allowed = Y, N
Radioactive Tracer Element Isotope	CHARACTER(40)			X3	Element isotope, blank if none	If Flag above = Y, then Radioactive Tracer Element Isotope must be entered
Chemical Tracer Used (Y/N)	CHARACTER (1)			Y3		List of Values Allowed = Y, N
Chemical Tracer Name	CHARACTER(40)			Z3	Chemical used, blank if none	If Flag above = Y, then Chemical Tracer Type must be entered
Proppant Type 1	CHARACTER(40)	YES		AA3	Proppant type. If proppant was not used, enter None in this field.	Enter at least one proppant type and amounts. If the fracture was conducted without proppant, enter "None" with 0t pumped and placed. Proppant type examples are 100 mesh, 50/140, 40/70, 20/40, 20/40 SB Prime etc.
Proppant Type 1 Pumped (t)	NUMBER(5,2)	YES	999.99	AB3	Tonnes of proppant pumped for proppant type 1. If proppant was not used, enter 0 in this field.	
Proppant Type 1 Placed (t)	NUMBER(5,2)	YES	999.99	AC3	Tonnes of proppant placed for proppant type 1. If proppant was not used, enter 0 in this field.	



FRAC Fields	Format	Required.	Max Length	Cell	Description	Edits
Proppant Type 2	CHARACTER(40)			AD3	Proppant type	If proppant type 2 field is entered then proppant type 2 pumped and proppant type 2 placed must be entered.
Proppant Type 2 Pumped (t)	NUMBER(5,2)		999.99	AE3	Tonnes of proppant pumped for proppant type 2	
Proppant Type 2 Placed (t)	NUMBER(5,2)		999.99	AF3	Tonnes of proppant placed for proppant type 2	
Proppant Type 3	CHARACTER(40)			AG3	Proppant type	If proppant type 3 field is entered then proppant type 3 pumped and proppant type 3 placed must be entered.
Proppant Type 3 Pumped (t)	NUMBER(5,2)		999.99	AH3	Tonnes of proppant pumped for proppant type 3.	
Proppant Type 3 Placed (t)	NUMBER(5,2)		999.99	AI3	Tonnes of proppant placed for proppant type 3.	
Proppant Type 4	CHARACTER(40)			AJ3	Proppant type	If proppant type 4 field is entered proppant type 4 pumped and proppant type 4 placed must be entered.
Proppant Type 4 Pumped (t)	NUMBER(5,2)		999.99	AK3	Tonnes of proppant pumped for proppant type 4.	
Proppant Type 4 Placed (t)	NUMBER(5,2)		999.99	AL3	Tonnes of proppant placed for proppant type 4.	

**Base Fluid:**

- Fresh Water is up to 4,000 ppm.
- Saline Water is > 4,000 ppm.

### Viscosity/Gel Type:

- Slickwater is water containing friction reducing chemicals with a low viscosity.
- Linear contains polymer (guar, guar derivatives or synthetic polymers (HPG, CMHPG, HEC)) added to the base fluid to increase viscosity.
- Cross-linked contains cross-linkers (borate ion) to join together overlapping linear polymer strands to increase viscosity of the base fluid.

### Energizer:

- Energized is less than 52 per cent N<sub>2</sub>, CO<sub>2</sub> or CO<sub>2</sub>/N<sub>2</sub> added.
- Foam is greater than 52 per cent N<sub>2</sub>, CO<sub>2</sub> or CO<sub>2</sub>/N<sub>2</sub> added.

## 2.2 Creating PERF Submission .csv file

### Cemented Cased Hole

A PERF .csv file is required for all cemented cased holes. The records within the PERF .csv file are to include all gun perforations as well as burst ports, frac ports and frac sleeves that are cemented into place. For fracture stages that have multiple frac sleeves opened by a single ball drop, the location of each frac sleeve is recorded as a net interval for the stage.

### Open Hole and Uncemented Cased Hole

A PERF .csv file is only required for open hole and uncemented cased hole completions where gun perforations were used. When gun perforations were used in one or more stages of the completion operation **both** a FRAC .csv file and a PERF .csv file are required. The perforation .csv file is to contain only the stages where the gun perforations were used. For example; a completion operation included the fracture of 25 stages, but gun perforations were only done in the last three stages. The hydraulic fracture data for this completion is to include a FRAC .csv file with stages 1 to 25 and a PERF .csv file with stages 23 to 25.

### File Naming

To facilitate standard identification of submitted data, files must have a file naming convention. Rename the template file using the following naming convention:

WANUM\_PERF\_YYYYMMDD\_OPTIONAL.csv

- WANUM must be five digits, including leading zeros. This is the Well Permit Number.
- Date entered should reflect the last date of operations.
- Example: 30207\_PERF\_2013SEP25\_InitialCompletion.csv.

### Complete the Header Information

Box A1 in the .csv file should contain the letters, space and symbol, and WA number.

Box B1 in the .csv file should contain the actual WA Number. This number will be compared to the WA Number in the matching Notice of Operation. See Figure 2 below for formatting.

Box C1 can contain any well description information, such as well name, Unique Well Identifier (UWI) or other internal company well identifier. This box is not edited and is for operator use only.

	A	B	C	D	E	F
1	WA #	00400				
2	Perf Stage #	Perf Date Year (YYYY)	Perf Date Month (Mon)	Perf Date Day (DD)	Perf Gross Interval Top Depth	Perf Gross Interval Base Depth
3	1	2011	Feb	16	567	914
4	2	2011	Feb	16	985	1054
5	3	2011	Feb	16	985	1054
6						
7						

Figure 2 Example of a perforation .csv file displayed in Microsoft Excel

### Complete the PERF Template

Complete the information in the .csv file, including the fields listed below, ensuring the following:

- There is a PERF Stage # for each Perf Gross Interval; including cemented burst ports, frac ports and frac sleeves. When reporting stages, the single digit value are used first (i.e. 1, 2, 3). Subsequent attempts within that stage are assigned an additional alpha value (i.e. 1a, 1b, 1c).
- Where cemented sleeves and/or ports are used, all stages within the assembly must be reported. Where zones are not completed, note “stage not completed” in the Perf Comments field.
- Required fields are those which are mandatory for a successful file upload in the eSubmission Portal. Data for all other fields must be included if collected during operations.
- Number fields cannot exceed those listed below. Number (3,1) indicates that you can enter up to three (3) digits including one (1) digit as a decimal. Example: 99.9.
- Character fields do not exceed those listed below. CHARACTER (30) indicates a user can enter up to 30 characters.
- Edits in the Table 2 below must be followed.

Table 2 PERF.csv Formats and Business Rules

Perf Fields	Format	Required.	Max Length	Cell	Description	Edits
WA Num	CHARACTER (5)	YES		B1	Well permit number.	Can be up to 5 digits. Examples (789, 0789 and 00789 are the same WA), (3456 and 03456 are the same), 24567
Perf Stage #	CHARACTER (5)	YES		A3	Perf Stage number - can have values such as 1,2,3...19, 20. 5A, 5B, 5C should be used when re-perfs are used to complete a stage, or 1TOE to open toe port in cased well completion.	Alpha numeric allowed. Cannot be zero. Examples 1, 1A, 2, 3, 3A, 3B, 3C, 4, 20.
Perf Date Year (YYYY)	CHARACTER (4)	YES		B3		Format Allowed = YYYY
Perf Date Month (Mon)	CHARACTER (4)	YES		C3		Format Allowed = MON
Perf Date Day (DD)	CHARACTER (2)	YES		D3		Format Allowed = DD
						All 3 date components must concatenate into a valid date. Date cannot be in the future.
Perf Gross Interval Top Depth	NUMBER (7,1)	YES	999999.9	E3		Gross interval top depth must be less than gross interval base depth.
Perf Gross Interval Base Depth	NUMBER (7,1)	YES	999999.9	F3		
Charge Size	NUMBER (3,1)		99.9	G3	Example # of grams (such as 23)	Charge size, charge type, shots per meter and degree of phasing - must enter all or none.
Charge Type	CHARACTER (40)			H3	Examples SDP, DP, GH, BH, Connex,etc	
Shots per Meter	NUMBER (2,0)		99	I3	Number of shots per meter - such as 8, 10, 14, 20	
Degree of Phasing	NUMBER (3,0)		999	J3		Value from 0 to 360 degrees.

Perf Fields	Format	Required.	Max Length	Cell	Description	Edits
Perf Comments	CHARACTER (200)			K3	Result of perf – Examples: 2 guns fired, All shots fired, Misfired and re-shot, opened Toe Port, burst disc, Port in casing, open frac sleeve, etc	
Perf Net Interval #1 Top Depth	NUMBER (7,1)		999999.9	L3		If there are multiple Perf Net Intervals, provide all Net intervals that comprise the Perf Gross interval. Net interval top depth cannot be less than gross interval top depth.
Perf Net Interval #1 Base Depth	NUMBER (7,1)		999999.9	M3		Net interval base depth cannot be greater than gross interval base depth.
Perf Net Interval #2 Top Depth	NUMBER (7,1)		999999.9	N3		Net interval top depth cannot be less than gross interval top depth.
Perf Net Interval #2 Base Depth	NUMBER (7,1)		999999.9	O3		Net interval base depth cannot be greater than gross interval base depth.
Perf Net Interval #100 Top Depth	NUMBER (7,1)		999999.9			You can have up to 100 Net Intervals in the .csv file.
Perf Net Interval #100 Base Depth	NUMBER (7,1)		999999.9			

## 3.0 Error Messages

When .csv files are uploaded through the [eSubmission Portal](#), the data items in the .csv file are subjected to quality assurance checks to verify all required data items are populated and within an acceptable range of values. If the data is incorrect, the file will not load and the user will get an error message.

The error message provides brief explanation of the error.

The user must open their .csv file, fix the incorrect data and upload the file again. If there are other errors, the user will continue to get an error alert until all errors are fixed.

For questions regarding error messages or to request the deletion or amendment of a previously submitted .csv file, please contact a [Well Analyst](#) in the Reservoir Engineering Department.

## 4.0 Additional Information

Fracture and perforation .csv files are submitted to the Commission through the [eSubmission Portal](#). Please refer to the eSubmission Portal User Guide for information on how to submit hydraulic fracture .csv files to the Commission.

For additional information on Well Data Submission Requirements please refer to the [Well Data Submission Requirements Manual](#).