ExxonMobil

EMC2PDFA V3

PIPELINE DUCTILE FRACTURE ANALYSIS

User Manual

v1.1

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Important Notes

Target Audience

The following document was created for anExxonMobil engineer who has already been trained on the topic, and understands the risks related to using this tool.

Risks

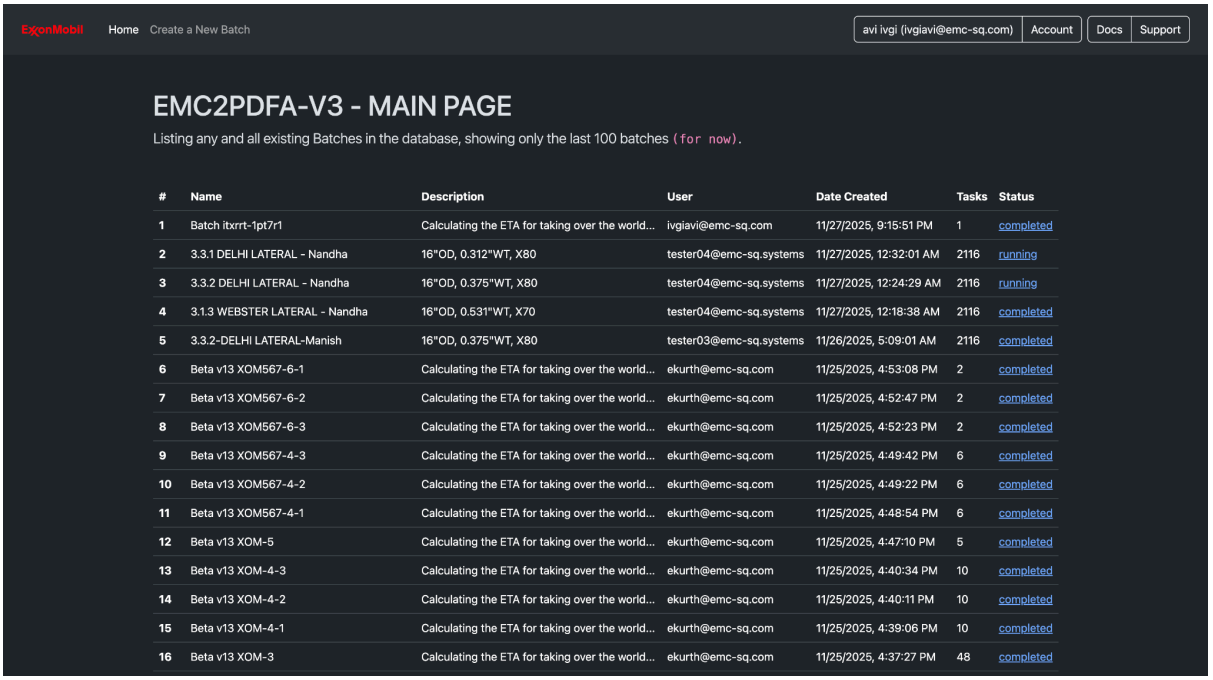
You must have SOLID understanding of this topic in order to properly read the values/suggestions provided to you. The analysis provided by the EMC2PDFA is only a guideline.

Navigation

All existing and available resources should be found in the top menu (navbar), either to the left or to the right.

Home Page

This page will present you with a list of all the batches in the system. You'll need to manually refresh the page to get the latest updates.

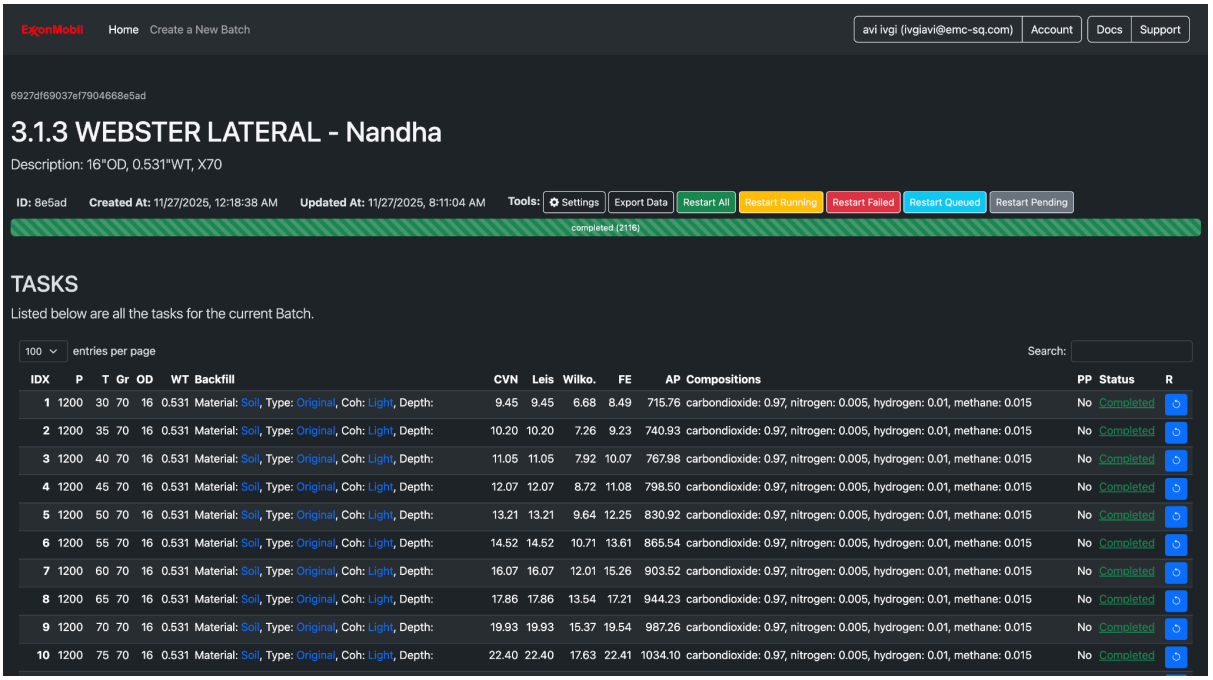


Batch Page

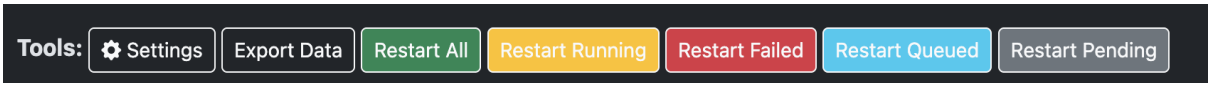
In the Home Page, once a specific Bath was selected (clicked on the batch status), you'll be redirected to the Batch Page.

This page will present you with a **list of all the tasks related to this Batch**.
You'll need to manually refresh the page to get the latest updates.

A Batch can have 1 or many Tasks assigned to it. Regardless of how many Tasks, the batch page will have the listed in a table format. When times come to look at the details of a Task, just click on the Task that you wish to further analyse/inspect and you'll be redirected to the Task Details Page.



Restarting a Batch/Task



A user can **restart a batch** (related tasks) in case the task(s) are "stuck" (spending a long time in a Queued/Pending status). Just click the relevant button (and **wait!** For the prompt to show). The relevant tasks will get submitted to the queue for reprocessing.

If you only wish to **restart a specific task**, just click the relevant **“blue resume button”** at the end of the specific task’s line.

Batch Page Fields

#	Display	Field Name	Display	Field Name
1	P	pressure	CVN	output_cvn_final
2	T	temperature	Leis	output_cvnleis
3	Gr	grade	Wilko.	output_cvnwilkowski
4	OD	pipe_outside_diameter	AP	arrest_pressure
5	WT	pipe_thickness	Compositions	compositions
6	Backfill	Backfill material	Status	status
7	PP	Propagation Predicted		

Task Page

Page Description

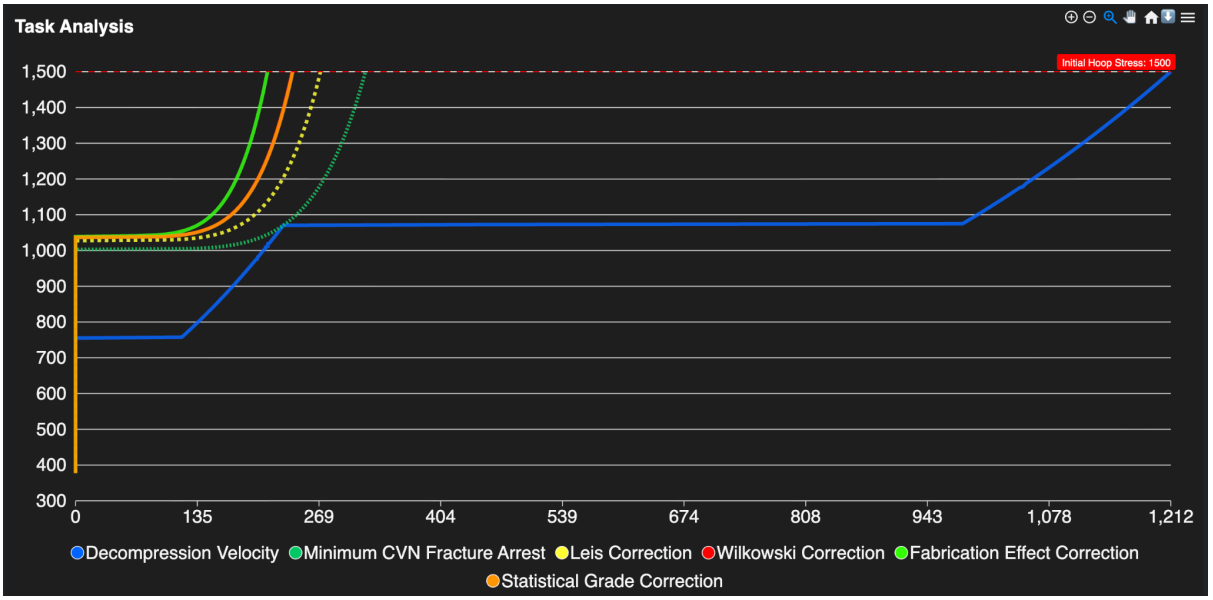
The Task Page hold the following 4 main sections:

- **1st Section:** Basic Task details
- **2nd Section:** Analysis Charts
- **3rd Section:** Main Calculations Table
- **4th Section:** Secondary Calculations Table

Basic Task details

Here you’ll find some basic details like: date created/updates, current task status, input parameters, and compositions selected for this task.

Analysis Charts



Nothing beats visuals, so we've compiled the following charts to support our findings with clear visual evidence. The following curves were created:

- Decompression Velocity
- Minimum CVN Fracture Arrest
- Leis Correction
- Wilkowski Correction
- Fabrication Effect Correction
- Statistical Grade Correction
- Arrest Pressure

Original Calculations Table

The updated table, represents all the results that REFPROPDll was able to generate, this includes valid/invalid/acceptable/unacceptable/errors/etc.

ORIGINAL

10 entries per page Search:

ID	P (US/psi)	P (SI/MPa)	FPV (ft/s)	FPV (m/s)	CVN L (US)	CVN W (US)	CVN FE (US)	CVN SGC (US)	CVN L (SI)	CVN W (SI)	CVN FE (SI)	CVN SGC (SI)
1	379.5000	2.6166	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	381.7500	2.6321	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	384.0000	2.6476	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	386.2500	2.6631	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	388.5000	2.6786	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	390.7500	2.6941	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	393.0000	2.7096	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	395.2500	2.7252	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	397.5000	2.7407	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	399.7500	2.7562	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Showing 1 to 10 of 499 entries « ‹ 1 2 3 4 5 ... 50 › »

Updated Calculations Table

The curves shown were generated using several of EMC²'s proprietary functions and methods. The results of these calculations are presented in the following table.

UPDATED

10 entries per page Search:

ID	P (US/psi)	P (SI/MPa)	D (SI/kg/m3)	D (US/lb/ft3)	SoS (ft/s)	leakage_flow	DV (ft/s)
1	757.5000	5.2228	425.2425	26.5470	304.9381	0.1869	117.5227
2	759.7500	5.2383	427.0383	26.6591	304.6343	0.3739	118.5066
3	762.0000	5.2538	428.8376	26.7715	304.3313	0.5611	119.4872
4	764.2500	5.2693	430.6406	26.8840	304.0290	0.7485	120.4644
5	766.5000	5.2848	432.4471	26.9968	303.7275	0.9360	121.4383
6	768.7500	5.3003	434.2572	27.1098	303.4267	1.1237	122.4088
7	771.0000	5.3159	436.0709	27.2230	303.1267	1.3115	123.3760
8	773.2500	5.3314	437.8881	27.3365	302.8273	1.4995	124.3399
9	775.5000	5.3469	439.7090	27.4501	302.5287	1.6877	125.3006
10	777.7500	5.3624	441.5335	27.5640	302.2308	1.8760	126.2579

Showing 1 to 10 of 328 entries « ‹ 1 2 3 4 5 ... 33 › »

The updated table, represents all the results that REFPROPDll was able to generate, **including** any/all relevant "FixArray" functions/methods that were used to filter out any "improper values".