



Start-up Procedure Preparation Questionnaire for a unit loaded with Sulficat[®] presulfided catalyst



All Information Provided herein Will Be Kept Confidential

Customer : Unit start-up date :

Unit type : Unit name :

number of reactors : in series or parallel :

number of bed/reactor :

Catalyst load (please attach loading plan if possible) :

Reactor/bed	Catalyst	Volume

1) General information about the unit (normal operating conditions)

A schematic unit flow sheet would be useful

- feed type : - unit working pressure :

- treat gas flow rate : - start-of-run temperature :

- feed flow rate :

2) Normal start-up questions on the unit:

2.1. Is it the first time this unit is loaded with presulfided catalyst ?

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2.2. Is the normal start-up procedure achieved under gas phase only or with an injection of liquid feed ?

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2.3. Normal start-up feed stock main characteristics - straight run cut, density, sulfur content, final boiling point ?

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2.4. At what reactor inlet temperature do you normally introduce start-up feed ? Can you inject below 100°C (200°F) ?

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2.5. Feed flow rate during start-up ? Normal; maxi, mini.

.....
2.6. Can liquid feed be recycled ? Where from ?

.....
2.7. Unit pressure during start-up ?

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2.8. Recycle gas flow rate during start-up (according to pressure conditions) ?
Normal, maxi, mini.

.....
2.9. Make up gas composition (during S/U) Recycle gas composition (normal operation) ?

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2.10. Is the gas recycled from HPS or from an another device (cold sep) ? at what
temperature, pressure ?

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2.11. Is there any H₂S scrubber or amine wash section in your recycle gas loop ? If so, can
you bypass it during start-up ?

.....
2.12. Temperature increase and reactor pressurising operation : is there any reactor
temperature embrittlement constraints due to hydrogen ? Can you describe the different
steps ?

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2.13. What is the maximum reactor temperature that can be reached during start-up ?

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2.14. What is the maximum temperature rate during start-up with treat gas or liquid feed ?

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2.15. Are there any quench facilities?, Temperature of the quench?

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3. Additional information for naphtha units:

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3.1. While activating the naphtha hydrotreater catalyst and until its effluent is on specification,
are there any facilities to bypass the platformer unit ?

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3.2. How is the naphtha pretreater start-up link to platformer start-up ? Do you have to pass
through the naphtha hydrotreater unit in order to start-up the reformer ?

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6 - 2 - Questionnaire for Start-up procedure preparation for a pilot plant

(A simple schematic flow sheet would be useful)

Catalyst load: (please attach loading schema if possible)

Reactor/bed	Catalyst	Volume

Feed:

Flow rate min/max :
Can liquid be recycled ? :

Treat gas (Reactor inlet)

Composition % vol. H₂ :
Flow rate min/max :
Can liquid be recycled ? from HPS ? :

Working pressure ? :

Start-of-run pressure ? :

Heating rate (min/norm/max) :

Can you recycle the liquid and the gas ? :

Can activation be carried out:

in once through mixed phase ? :
in once through gas phase ? :
in mixed phase with oil recycle ? :

In case of mixed phase start-up, what kind of start-up feed is used ? straight run GO ?

sulfur content :
final boiling point ? :

Can the water formation be monitored in the high pressure separator during the start-up ?

Can it be drained ?

Can H₂S be monitored in the Reactor exit gas ? Sulfur in Reactor effluent ?

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Is the pilot operated up flow or down flow ?
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