

**PREPARATION OF
PROCESS FLOW DIAGRAM****JGS 210-120-1-12E**

Rev.2 DATE FEB.-28-'97

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1. SCOPE

This standard practice covers the requirements of preparation procedure for the Process Flow Diagram (PFD) for petroleum refineries, petrochemical, chemical plants and other related plants.

This standard practice covers the following two cases of PFD:

- (1) JGC carries out the preparation of the PFD from draft to the As-Built PFD.
- (2) JGC reviews, develops and revises the PFD prepared by the licensor, and prepares the As -Built PFD finally.

2. GENERAL**2.1 Work Procedure**

- (1) Personnel concerned in preparatory work shall be designated prior to the commencement of PFD preparation work and clarify the required basic items for the purpose of minimizing the revisions.
- (2) The responsibility for the preparation, revision and handling of the PFD and relevant coordination shall in principle be transferred from the process engineer to the project engineer upon issuance of the "PFD for Construction"
 - (a) Up to issuance of the "PFD for Construction" : Process engineer
 - (b) Upon issuance thereof : Project engineer

2.2 Purpose of PFD

The purpose of PFD should be as follows:

- (1) Scope of process
The identification of the scope of the plant to be constructed.
- (2) Plant design basis
The identification of design basis indicating process flows from the feedstocks, to the products and by-products.
- (3) Equipment configuration
- (4) Process Control Scheme

2.3 Format

- (1) Form
JGC Standard form should be used, unless required by the Client.
- (2) Drawing size
Basically ISO A1 size should be used.
However, ISO A2, A3 or X size can be used in accordance with the plant size.
- (3) Flow direction*
PFD should be drawn from left to right.
- (4) Title block
The title block should include the following, unless required by the client.
 - JGC logo
 - Project name
 - Unit name, if any
 - Client's name
 - Drawing title
 - Issue date
 - Signature of prepared, checked and approved by the appropriate personnel
 - JGC's Job code
 - Drawing number
 - Revision number and reason for revision

(5) Legend

The following should be indicated in legend.

- Operating pressure
- Operating temperature
- Heat duty for heat transfer equipment

3. WORK PROCEDURE**3.1 Preparatory Work**

Prior to the preparation of PFD, heat and material balances including physical properties shall be calculated.

3.2 Items to be Indicated

The following shall be indicated on PFD.

(1) Equipment

- Shape
- Item number and service name
- Main dimensions or capacity

(2) Stream Lines

- Main process lines with stream number
- Secondary process lines, if important
- Main utility lines with related equipment

(3) Instrumentation

- Control system with control valves
- Important instruments

(4) Operating conditions around major equipment**(5) Stream data for main process lines (for details, reference is made to paragraph 3.3)****3.3 Stream Data**

Stream data shall consist of the following:

- (1) Stream number
- (2) Stream description
- (3) Molar or weight flow rate of individual components, if required
- (4) Composition of flowing fluid, if required
- (5) Total flow rate (Molar and Weight)
- (6) Total volumetric flow rate, if required
- (7) Molecular weight, if required
- (8) Density, if required
- (9) Liquid fraction
- (10) Operating temperature
- (11) Operating pressure

4. GENERAL DRAFTING INSTRUCTIONS**4.1 Scale**

PFD need not be drafted on scale. However, their shape should be compatible with that of equipment.

4.2 Lines**4.2.1 Types**

The types of lines should be as follows :

- (1) Main process lines



- (2) Secondary process lines and utility lines

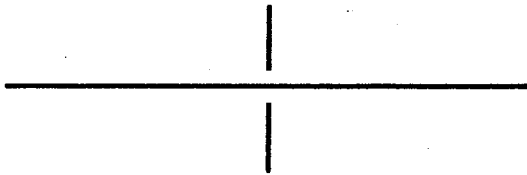


- (3) Loop lines for instrumentation

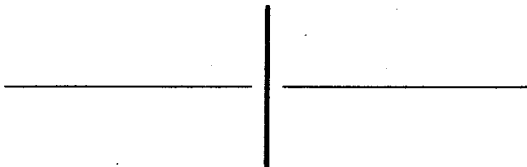
**4.2.2 Crossover**

Where two lines cross each other, the horizontal line should basically take precedence over vertical ones.

- (1) Where two main lines crossover



- (2) Where one main line crosses one secondary line or utility line



- (3) Where one main line, secondary lines or utility lines cross one loop line for an instrument:

