S T P

Specific Training Packages

7000-S-62-90-T-0001-00

Sakhalin Energy LNG/OET/TLU

S T P

Unit 6200

The purpose of STP Training is that the operator will have understanding and awareness of the following topics.

1. Process Introduction
2. Purpose of the Unit
3. Process description
4. Equipment
5. Health, Safety and Environment
6. Routine checks

Introduction to the unit

To collect and dispose vapour and liquid in a safe manner:

Types of gas and systems:

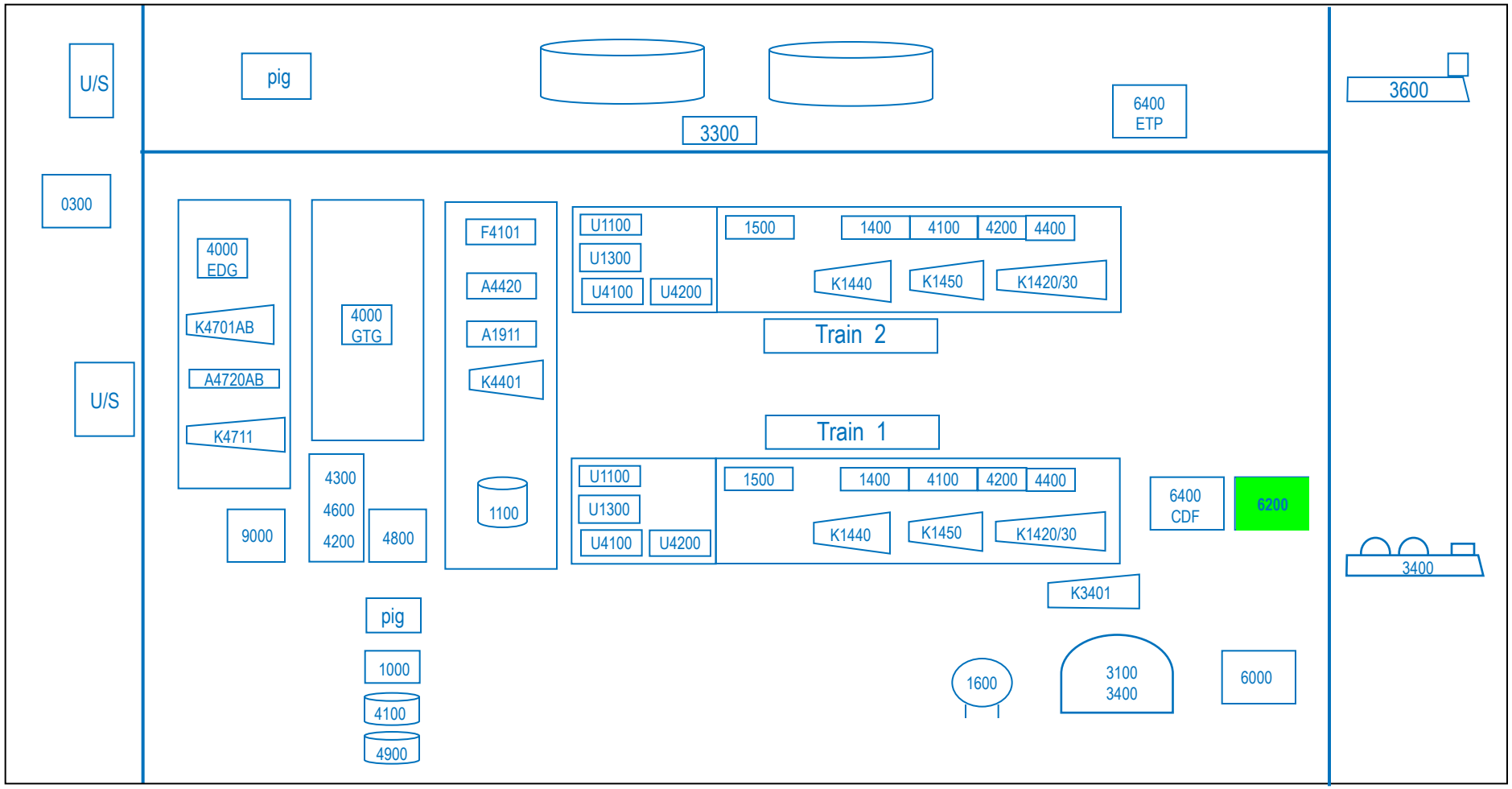
- Emergency operational system for cold, light, dry streams, liquid and vapour.
- Emergency operational system for warm, heavy, streams, liquid and vapour.
- Emergency operational system for LNG storage and loading, vapour.
- Operational flare system, vapour.
- LNG disposal system liquid and vapour (start-up).
- Spare flare can be used for cold and warm service.
- Liquid disposal burners.

Purpose of the unit

Purpose:

- **The purpose of the unit is to safely collect and dispose vapor or liquid hydrocarbons that result from upsets and emergencies.**
- **The unit can also handle streams as a result of operational conditions such as start-up, shutdown, venting, draining and purging. Also warm up and cool down of equipment or piping is accommodated.**

Unit 6400 position on the Plant overview



Process description

Warm Flare System (FWW)

- All the warm vapours are collected into a single 48” header which slopes to the liquid knock-out drum V-6201.
- The header is continuously purged with LP fuel gas at sufficient flow rate to keep velocity at the tip of flare stack. Nitrogen connection is also given as back-up purge source.
- Vapours from V-6201 are routed and burned to warm flare A-6201 via 56” line.

Process description

Warm Liquid Disposal System (DHC)

- The warm liquids from manual drains are collected in a 4” header and routed to V-6201.
- Light components are flashed-off and burned in A-6201 (FWW).
- The accumulated liquid in V-6201 is pumped and transferred to warm liquid burner A-6204 by P-6201A/B via 6” line.

Process description

Cold Flare System (FCD)

- Cold dry and light hydrocarbon vapours from unit 1400, 1500 and 1600 are collected into a 48” header which slopes to the cold flare KO drum V-6202.
- The header is continuously purged with LP fuel gas. Nitrogen connection is also given as back-up purge source.
- Vapour from the cold flare KO drum is directed to the cold flare (A-6202) through a 56” line.
- HP fuel gas is used as atomising gas to flare stack A-6202.

Process description

Cold Liquid Disposal System (DLH)

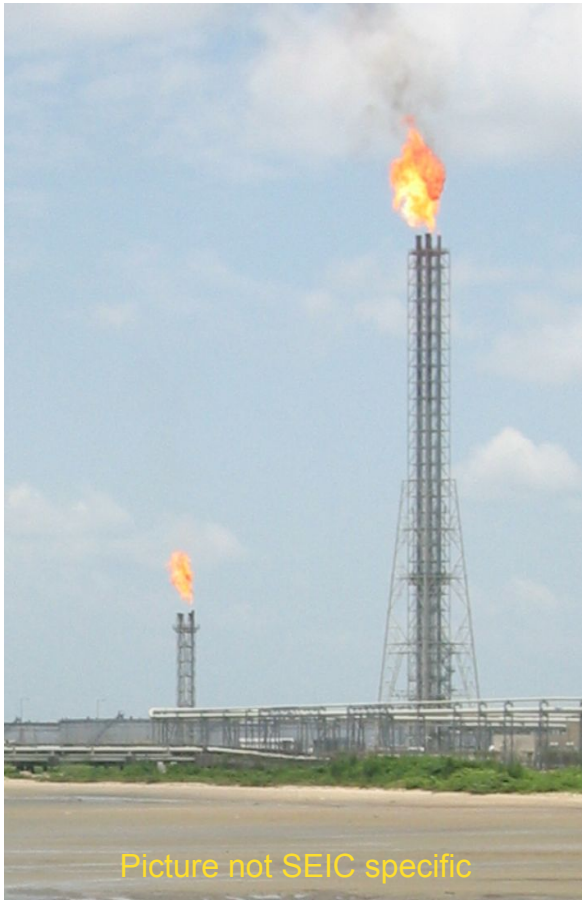
- All the cold liquids are collected into two 12” headers that are routed to the cold flare KO Drum (V-6202). flashed vapours are removed and burned in A-6202.

- Liquid from V-6202 is drained by gravity to the blow cases (V-6207A/B) via an 8” line which transfers the liquid to the cold liquid burners A-6205A/B. HP fuel gas is used as motive or pressuring gas.

Process description

Operational Flare System (FOP)

- Operationally initiated release is vented to separate 16” FOP header.
- The vented gas is routed to V-6203 and burned in operational flare, A-6211.

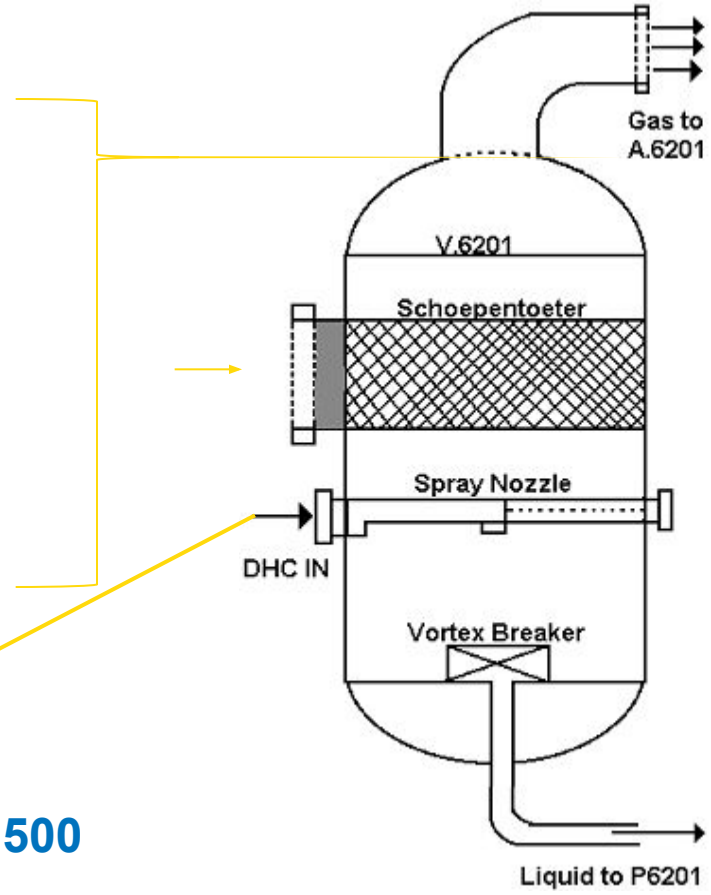


Process description

Warm Flare System – FWW

- Vapour collection point from
  - Unit 1000,1100,1300,1350,1400, 1500,1900,4000,4100 and 4400

- Liquid disposal point – DHC
  - Collects liquids from Unit 1000,1100,4400,1400 and unit 1500



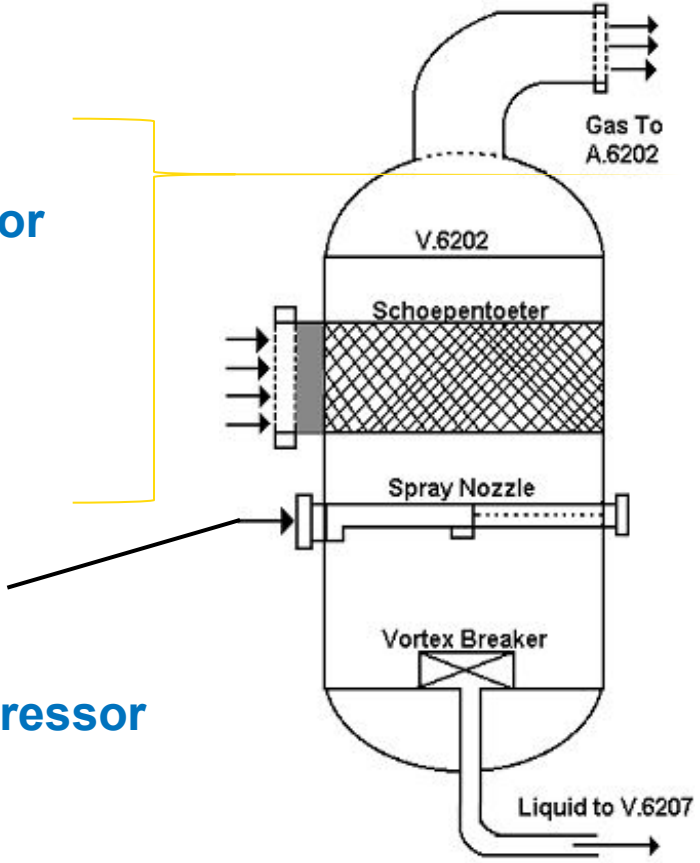
Process description

Cold Flare System collection point - FCD

- Unit 1400, liquefaction and MR compressor
- Unit 1500, fractionation unit
- Unit 1600, refrigerant storage

Cold liquid disposal point- DLH

- Unit 1400, liquefaction and MR compressor
- Unit 1500, fractionation unit



Process description

LNG Storage and Loading Flare – FLP

- Unit 3400, LNG storage and loading
- Boil-off gas compressors dry gas seal, relief valves

Operational Flare System – FOP

- Unit 1400, liquefaction and MR compressor

Process description

Fuel Gas:

High pressure fuel gas is used for:

- **Motive gas in the blow cases V-6207A/B.**
- **Atomising gas.**
- **Fuel gas pilot burners.**
- **Fuel gas for the flame front generators.**

Low pressure fuel gas is used for:

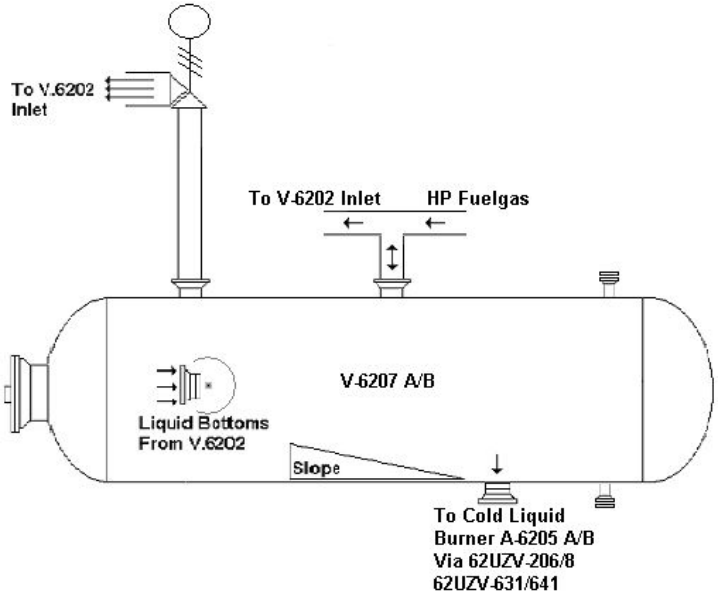
- **Purging.**

Process description

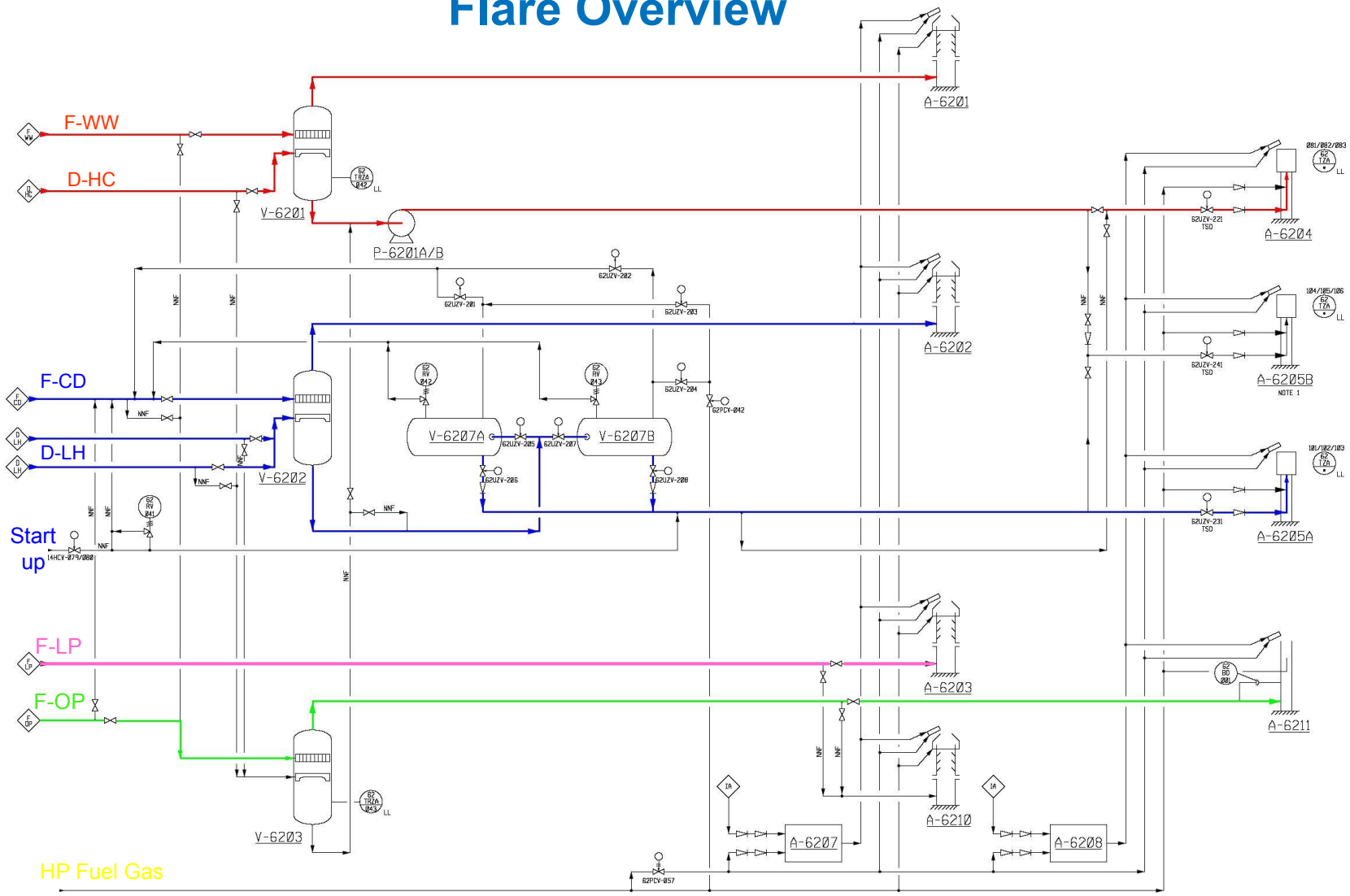
Blow case:

- Liquid from the cold flare KO drums is drained by gravity to one of the two blow case vessels.

- HP fuel gas is used to pressurise the blow case before displacing the liquid to the cold liquid burner.



Flare Overview



Major equipment

- 3 flare KO drums
- One blow case (two vessels)
- Two warm liquid disposal pumps
- One warm flare
- One cold flare
- One storage and loading flare
- One spare flare
- One warm liquid burner
- Two cold liquid burners
- Two flame front generators

Health, Safety and Environment

Health, Safety:

- Noise when the flare is operating.
- Radiated heat from the flare.
- Nitrogen can be asphyxiating in high concentration.
- Cryogenic temperatures.
- High pressures.

Environment

- Controlled releases to atmosphere from the flares and liquid disposal burners pose no harm to the environment.

- Uncontrolled releases can occur as a result of a plant emergencies, and short term air pollution from the unburnt gases.

Routine checks

Routine checks:

- **Check for leaks.**
- **Check running equipment for any abnormal noise.**
- **Fill in log sheet.**
- **Check on night shift if the pilot burners are on.**