

# SHUAIBA NORTH

DESALINATION PLANT

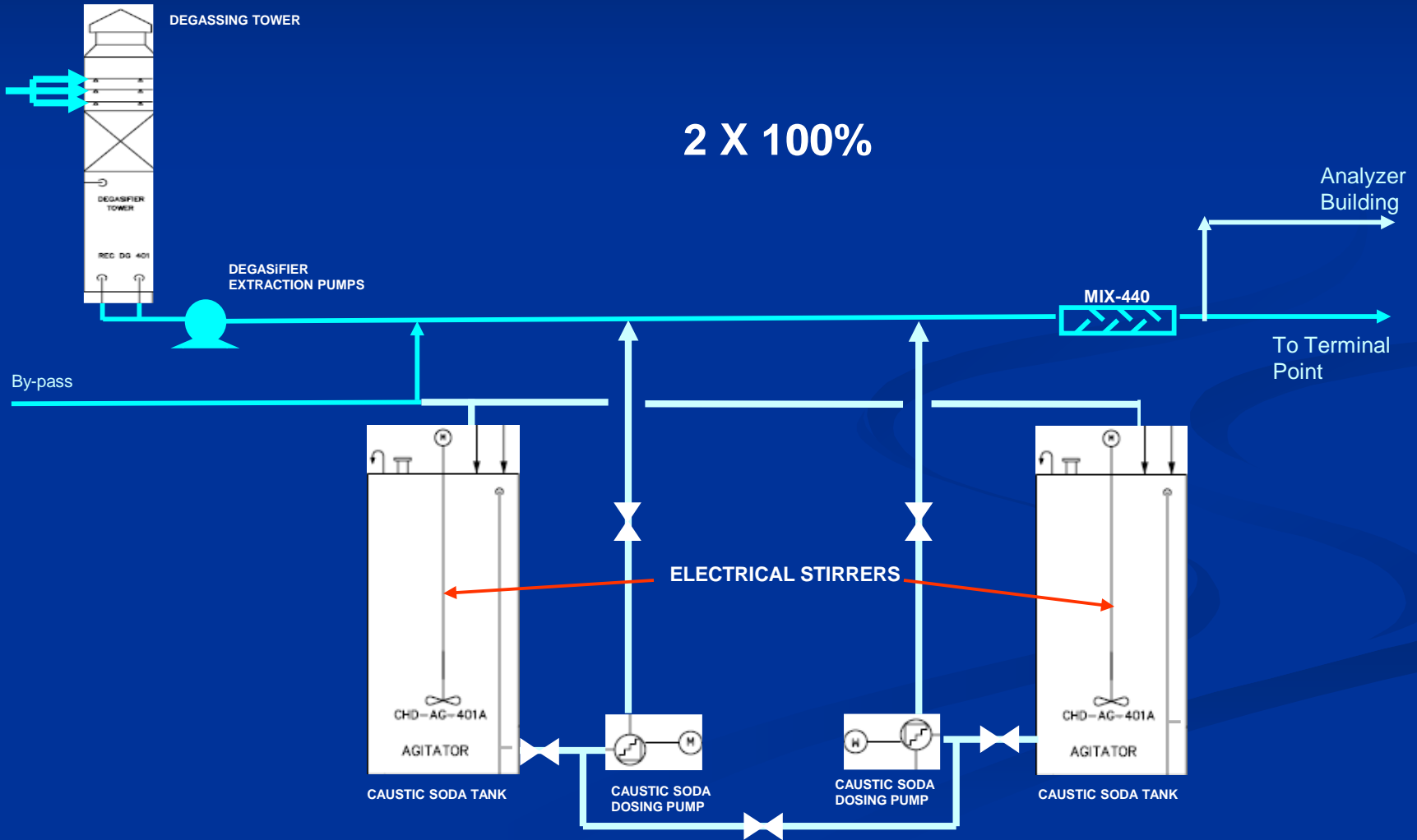
RECARBONATION PLANT  
OPERATION TRAINING

NaOH DOSING SYSTEM

Genny  
Della  
Penna

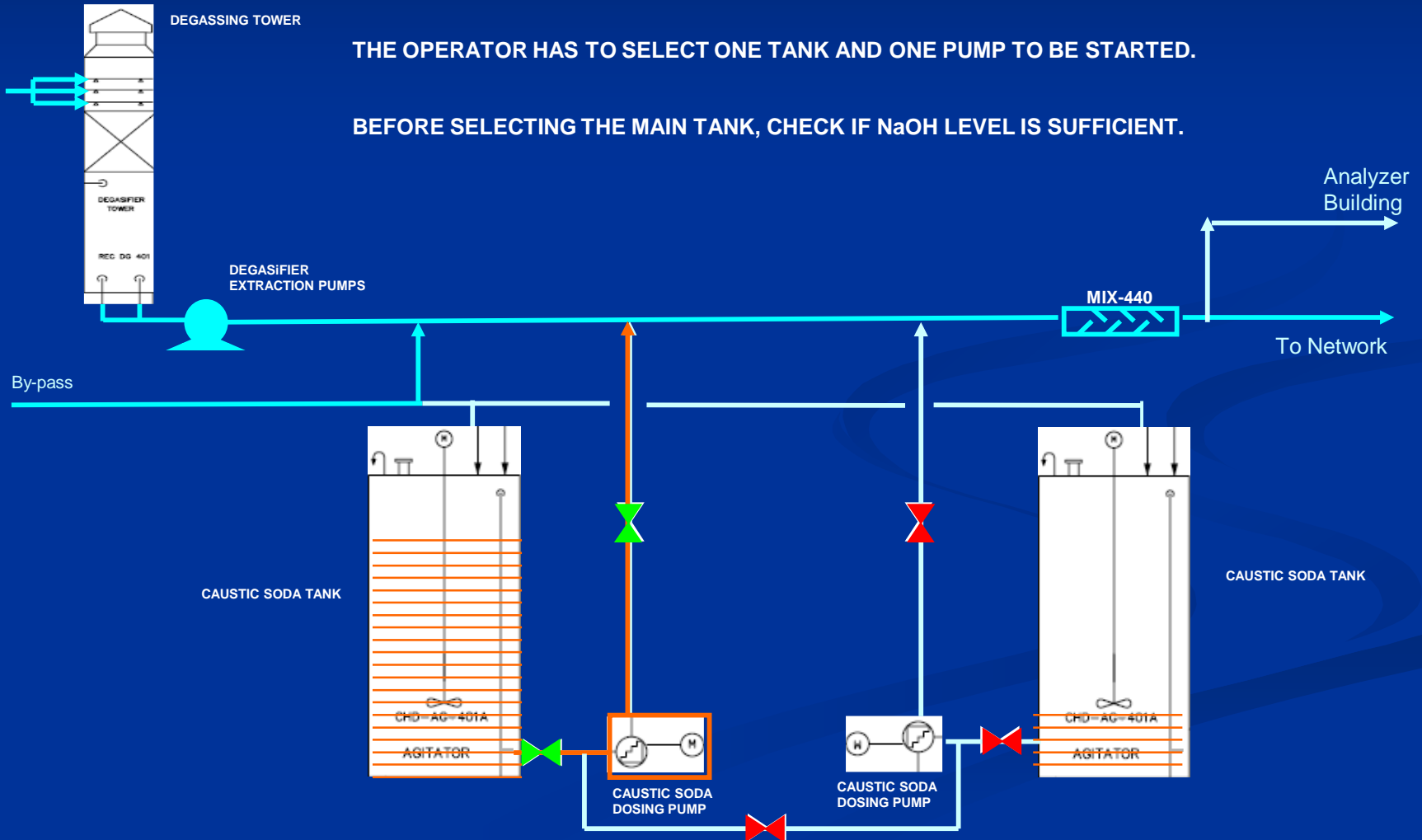
# RECARBONATION PLANT

## NaOH DOSING SYSTEM



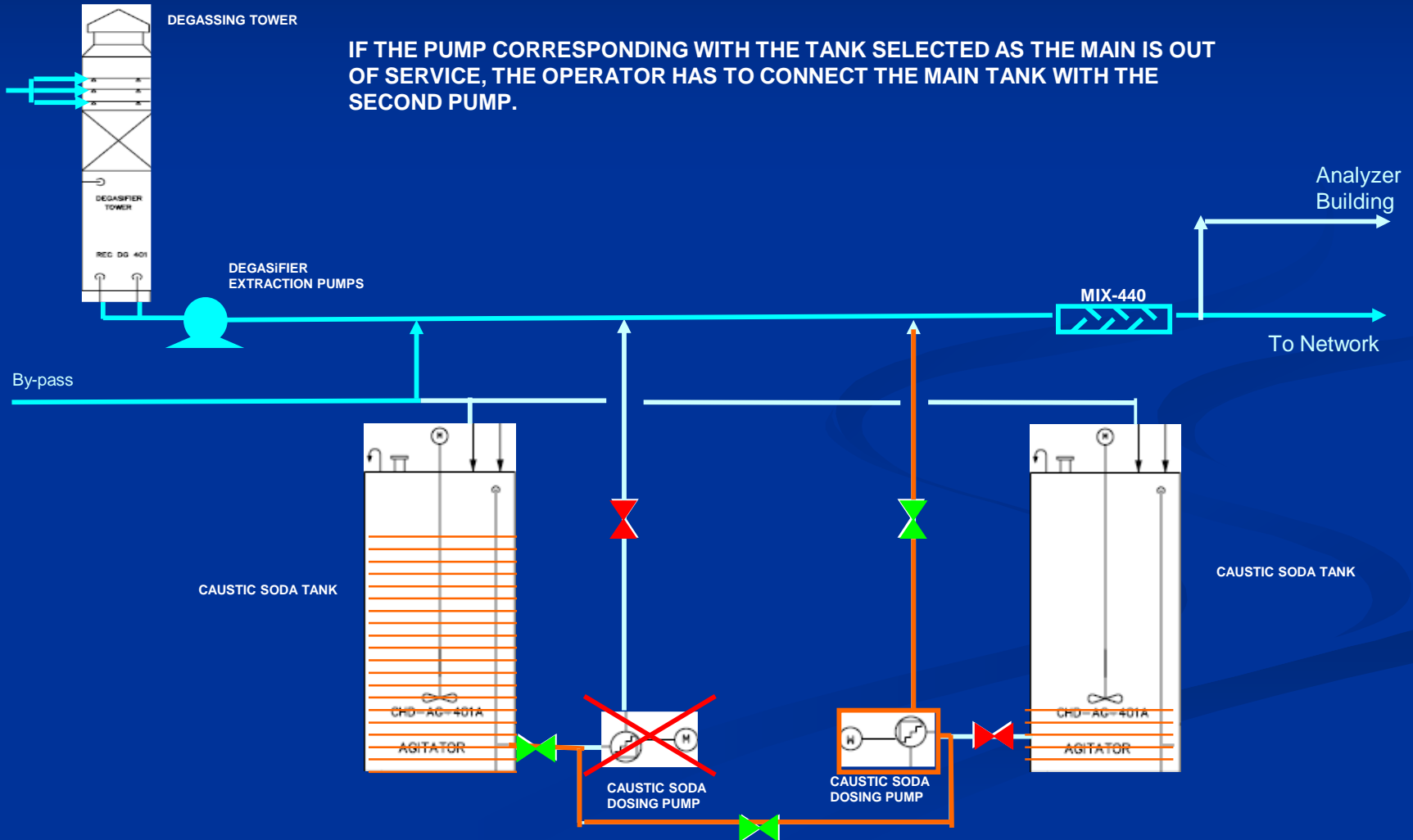
# RECARBONATION PLANT

## NaOH DOSING SYSTEM



# RECARBONATION PLANT

## NaOH DOSING SYSTEM



MINISTRY OF  
ELECTRICITY & WATER

دولة الكويت  
STATE OF KUWAIT

وزارة الكهرباء والماء

POWER STATION AND  
DISTILLATION PLANT  
PROJECTS SECTOR



قطاع مشاريع محطات القوى  
الكهربائية وتقطير المياه

# SHUAIBA NORTH

DESALINATION PLANT

RECARBONATION PLANT

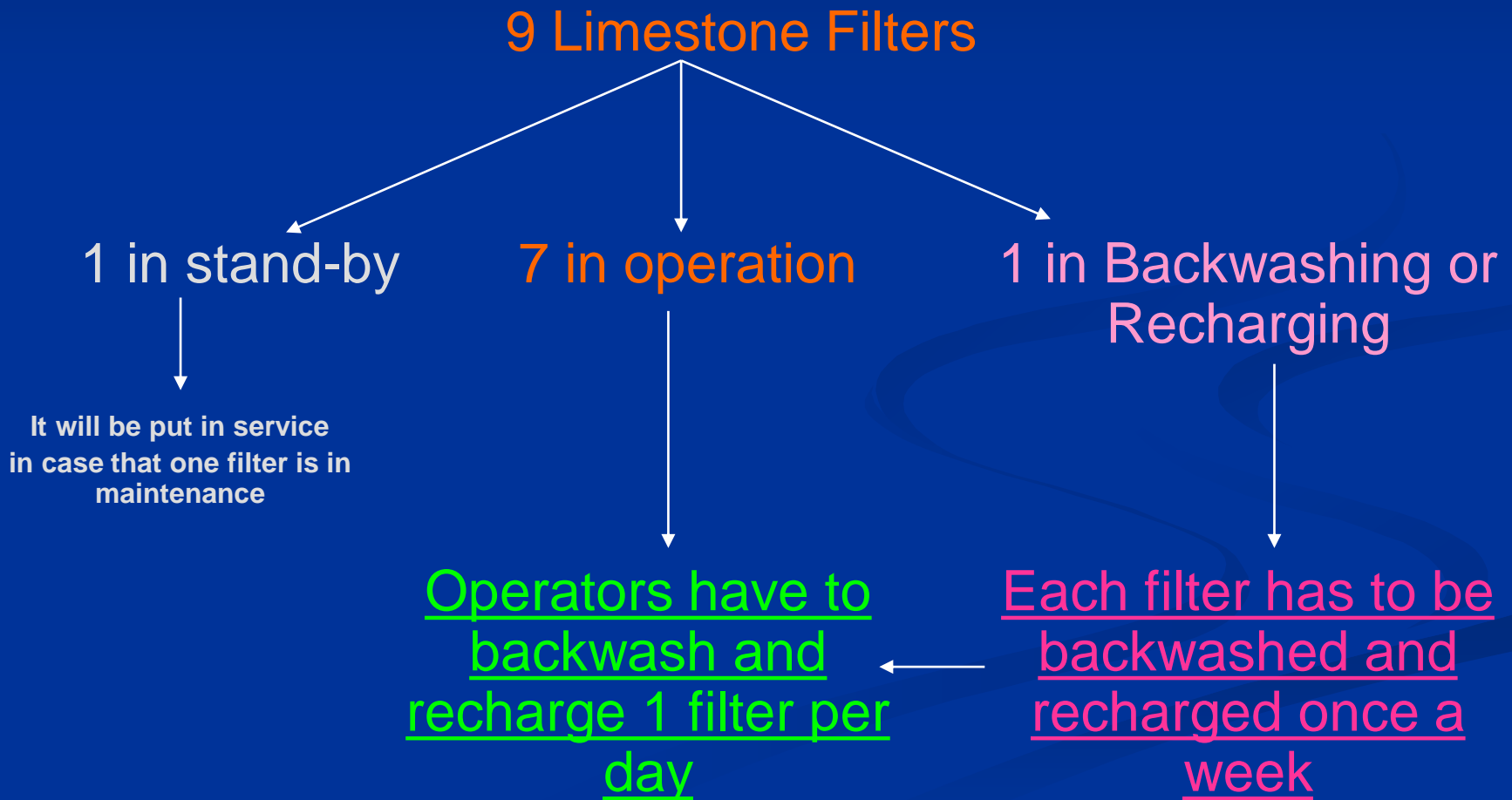
OPERATION TRAINING

LIMESTONE FILTERS

RECHARGING AND BACKWASHING

# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING



# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

### WHY?

- L.F. have to be refilled periodically to make up consumption due to dissolution
- L.F. have to be backwashed periodically for reducing the pressure loss across the filter

The pressure loss increases for two reasons:

- the reduction of limestone particle sizes
- the accumulation of impurities inside the bed (recharged limestone brings some dust into the L.F.)

# **RECARBONATION PLANT**

**LIMESTONE FILTERS RECHARGING & BACKWASHING**

## **LIMESTONE FILTERS BACKWASHING SEQUENCE**

**1 - DRAIN OUT**

**2 - LIMESTONE RECHARGING**

**3 - AIR SCOURING**

**4 - BACKWASH**



# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

DISTILLATE INLET

RECARBONATED WATER  
OUTLET

VENT

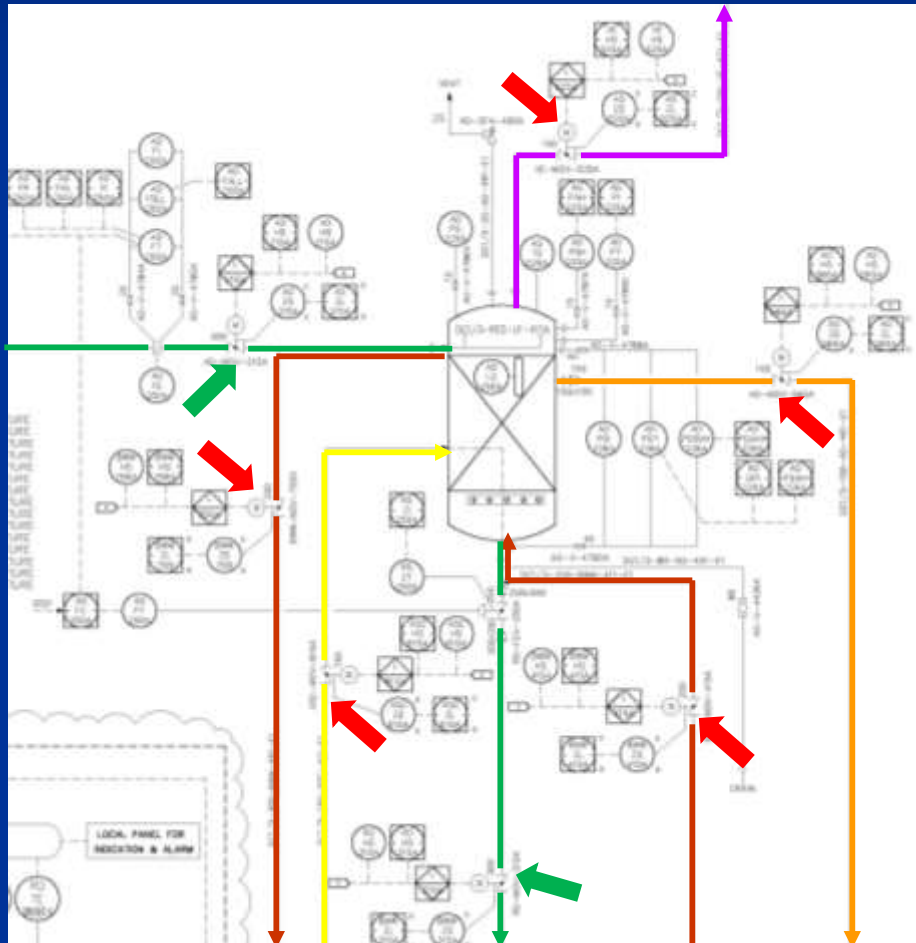
DRAIN

AIR SCOURING

BACKWASH WATER

➔ VALVE OPEN

➔ VALVE CLOSED



LIMESTONE  
FILTER IN  
OPERATION

# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

DISTILLATE INLET

RECARBONATED WATER  
OUTLET

VENT

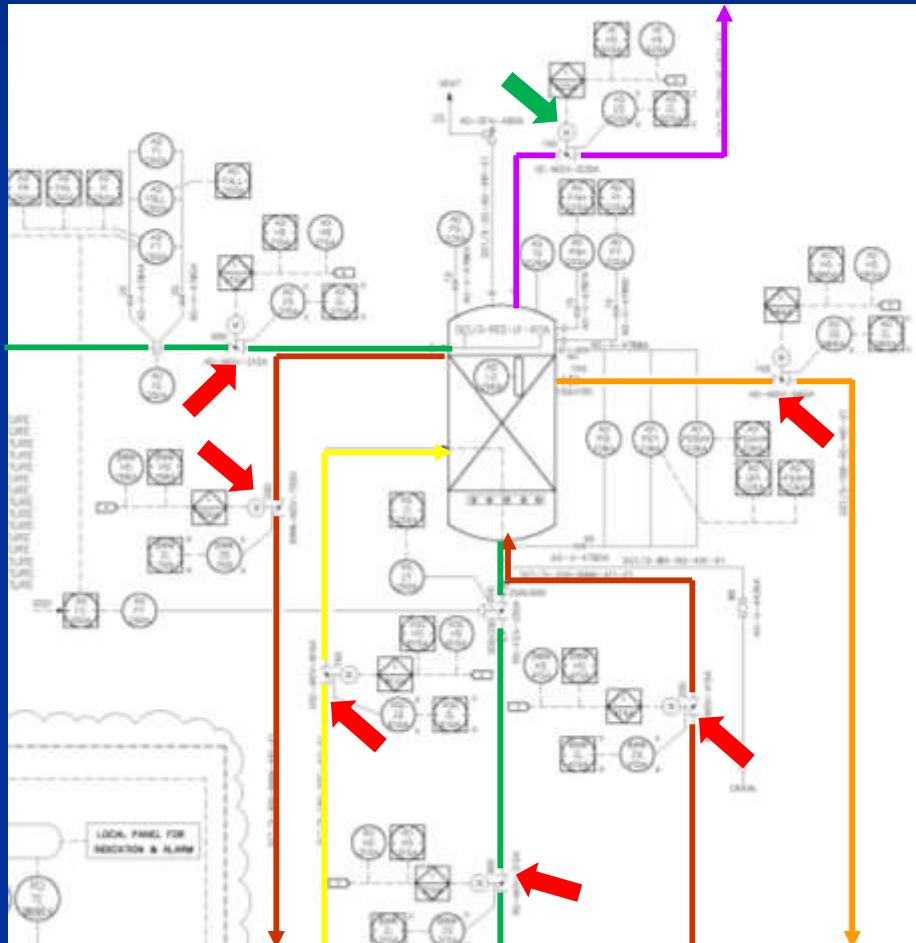
DRAIN

AIR SCOURING

BACKWASH WATER

→ VALVE OPEN

→ VALVE CLOSED



**LIMESTONE  
FILTER IN  
STAND-BY**

**ONCE THE L.F. IS  
PUT IN STAND-BY,  
VALVES ARE  
AUTOMATICALLY  
OPERATED**

# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

DISTILLATE INLET

RECARBONATED WATER  
OUTLET

VENT

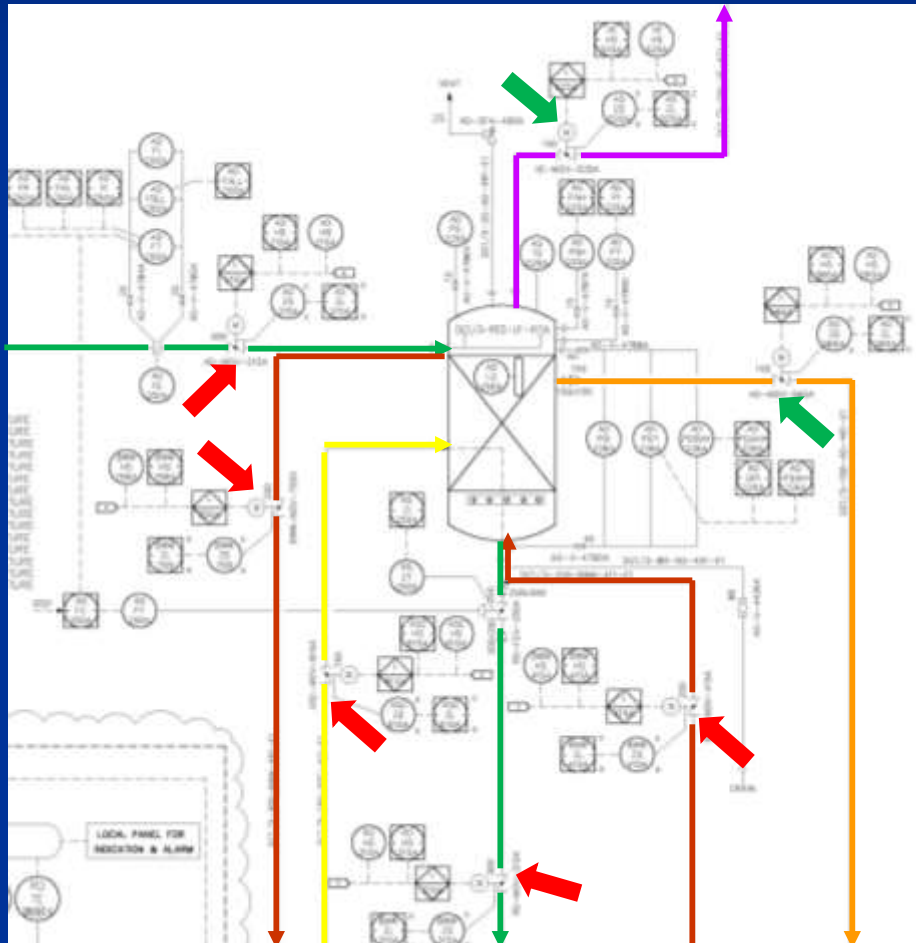
DRAIN

AIR SCOURING

BACKWASH WATER

→ VALVE OPEN

→ VALVE CLOSED



**LIMESTONE  
FILTER IN  
BACKWASHING**

**1<sup>st</sup> STEP:  
DRAIN OUT  
(40 min.)**

**ONCE THE  
COMMAND TO  
BACKWASH IS  
GIVEN, VALVES  
ARE  
AUTOMATICALLY  
OPERATED**

# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

DISTILLATE INLET

RECARBONATED WATER  
OUTLET

VENT

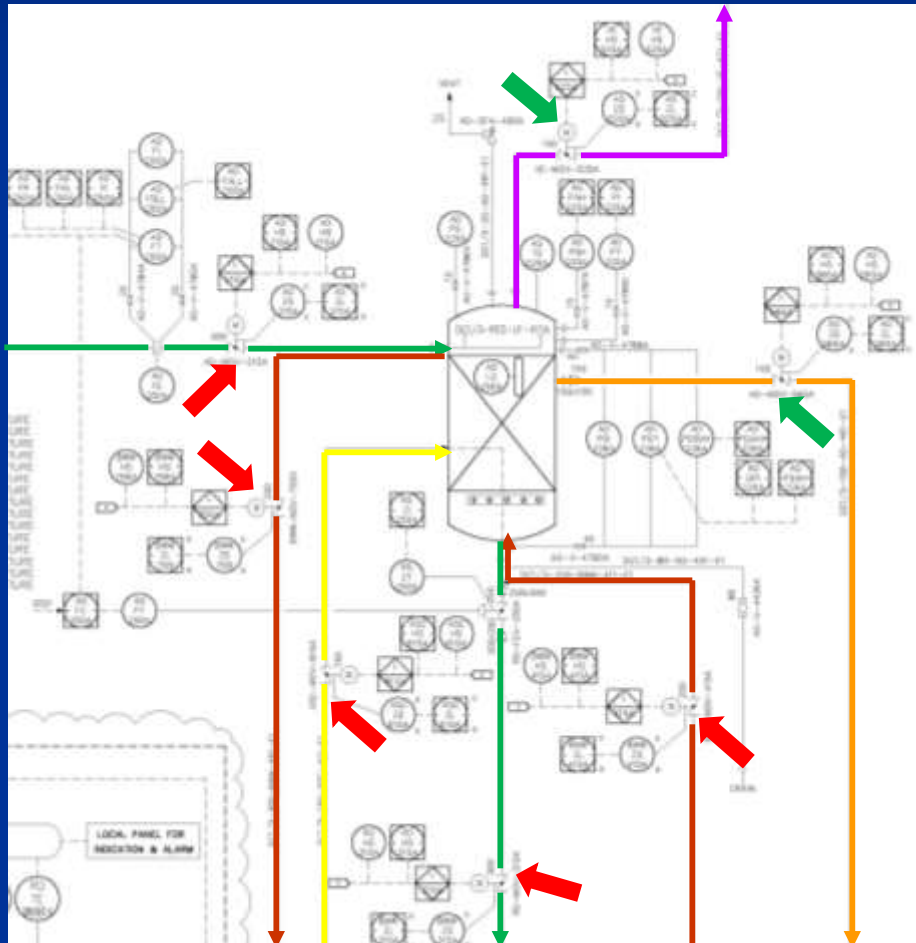
DRAIN

AIR SCOURING

BACKWASH WATER

→ VALVE OPEN

→ VALVE CLOSED



**LIMESTONE  
FILTER IN  
BACKWASHING**

**2<sup>nd</sup> STEP:  
RECHARGING  
(~60 min.)**

**RECHARGING  
IS A MANUAL  
OPERATION**

# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

DISTILLATE INLET

RECARBONATED WATER  
OUTLET

VENT

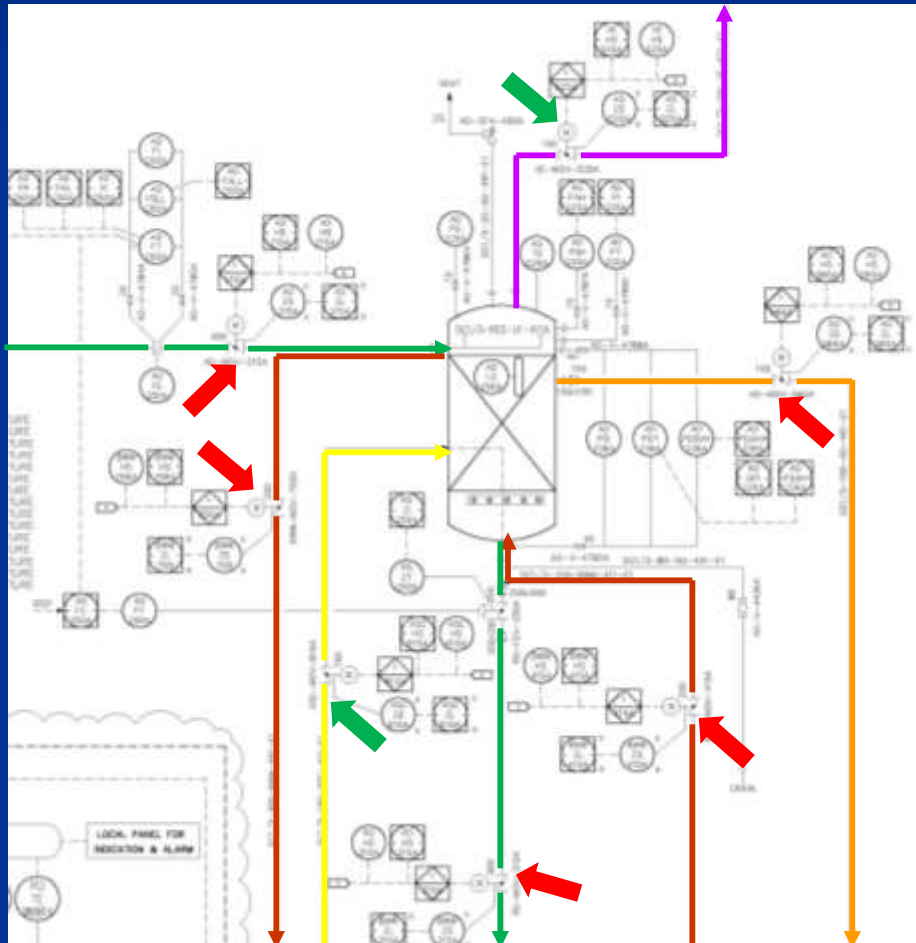
DRAIN

AIR SCOURING

BACKWASH WATER

→ VALVE OPEN

→ VALVE CLOSED



LIMESTONE  
FILTER IN  
BACKWASHING

3<sup>rd</sup> STEP:  
AIR SCOURING  
(5 min.)

# RECARBONATION PLANT

## LIMESTONE FILTERS RECHARGING & BACKWASHING

DISTILLATE INLET

RECARBONATED WATER  
OUTLET

VENT

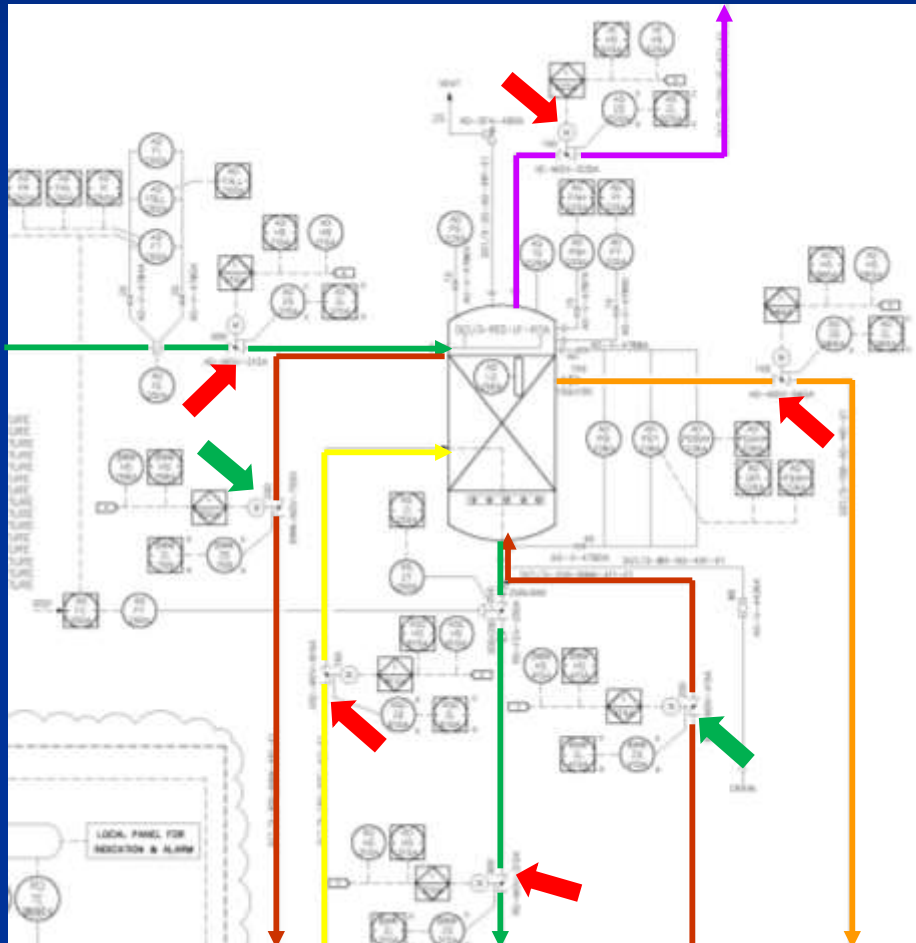
DRAIN

AIR SCOURING

BACKWASH WATER

→ VALVE OPEN

→ VALVE CLOSED



**LIMESTONE  
FILTER IN  
BACKWASHING**

**4<sup>th</sup> STEP:  
BACKWASHING  
(10 min.)**

# RECARBONATION PLANT

LIMESTONE FILTERS RECHARGING & BACKWASHING

THE LIMESTONE FILTERS BACKWASHING  
SEQUENCE IS NOW COMPLETED