



FUEL HANDLING AND STORAGE / SPENT FUEL STORAGE SYSTEM

Sections 17.1 / 17.2

Learning Objectives

1. State the purposes of the fuel handling and storage (FH&S) [systems](#).
2. State the function of the following FH&S equipment.
 - a. Spent Fuel Pool Bridge [Crane](#)
 - b. New Fuel [Elevator](#)
 - c. Fuel Transfer [Canal](#)
 - d. Polar [Crane](#).

Learning Objectives

2. State the function of the following FH&S equipment (continued).
 - e. Manipulator [Crane](#)
 - f. RCCA Change [Fixture](#)
 - g. Reactor Vessel Stud [Tensioner](#)
 - h. Conveyor [Car](#)
 - i. Upender

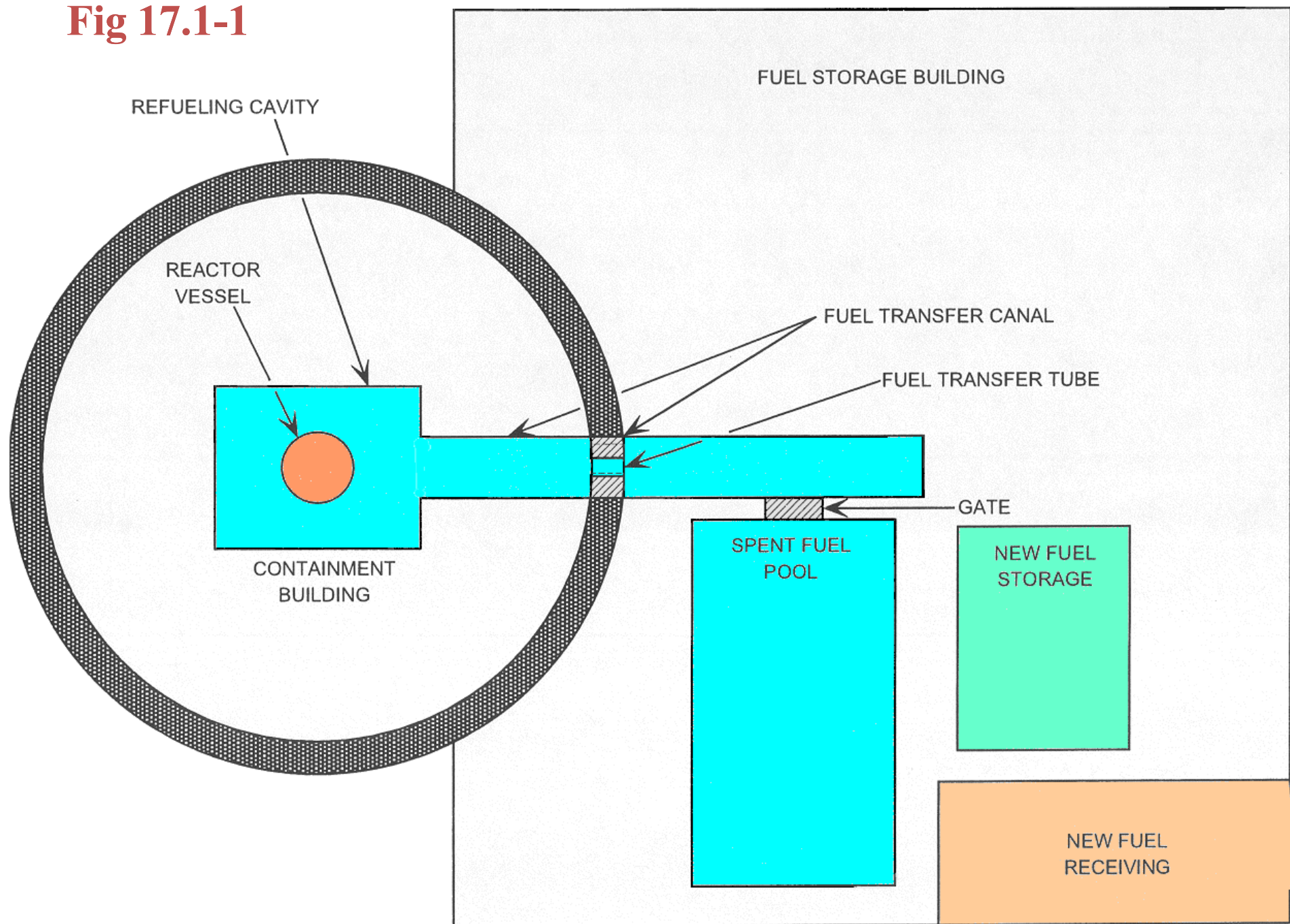
Learning Objectives

3. State the reasons for handling spent fuel under water.

FH&S Purposes – Obj 1 17.1.1

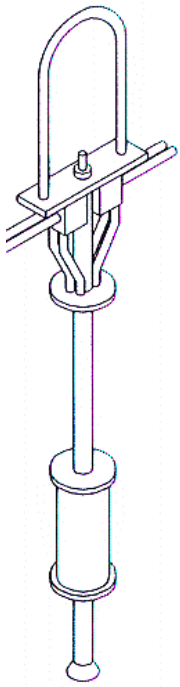
- Receive & store new fuel.
- Transfer new and spent fuel between containment and fuel storage building.
- Store spent fuel in the Spent Fuel Pool.

Fig 17.1-1

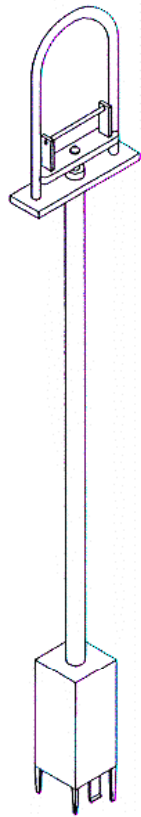


New Fuel Elevator - Obj 2b 17.1.2.2

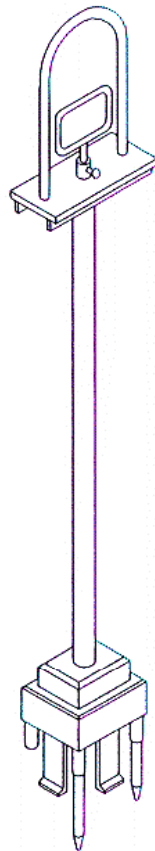
- New fuel is transported to the spent fuel pit prior to refueling.
- The Fuel Storage Building Crane is used to transport the new fuel to the New Fuel Elevator located in the Spent Fuel Pit.
- The New Fuel Elevator is used to lower the fuel assembly to the level of the Spent Fuel Racks.



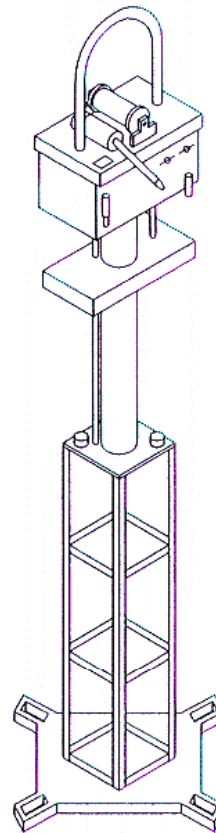
C. R. D. M.
JNLATCHING
TOOL



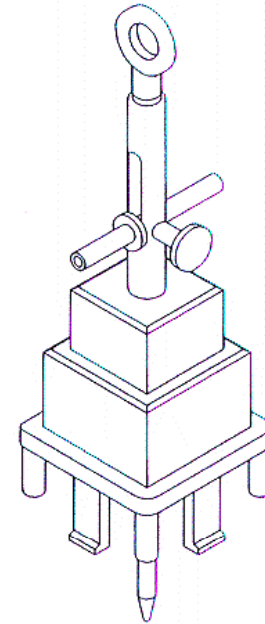
R C C A
THIMBLE PLUG
HANDLING
TOOL



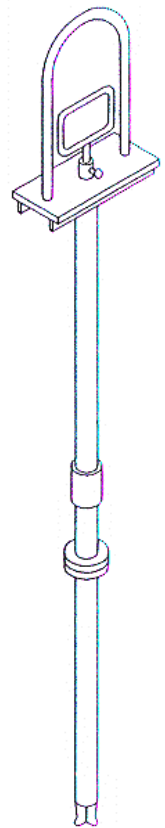
SPENT FUEL
HANDLING
TOOL



B P R A
HANDLING
TOOL



NEW FUEL
HANDLING
TOOL



IRRADIATION
SAMPLE
HANDLING
TOOL

Fig. 17.1-5

Fig 17.1-2 Spent Fuel Pool

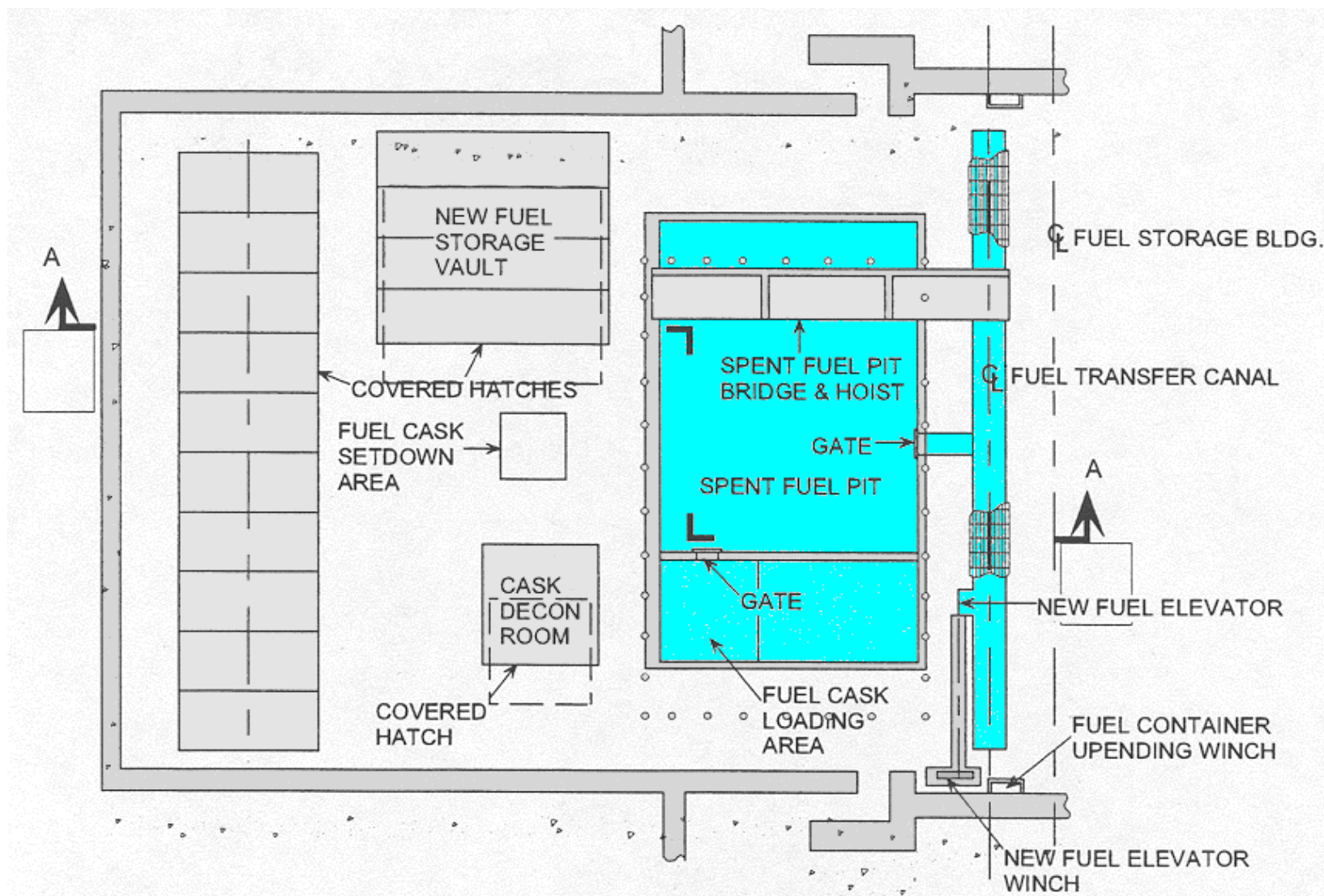
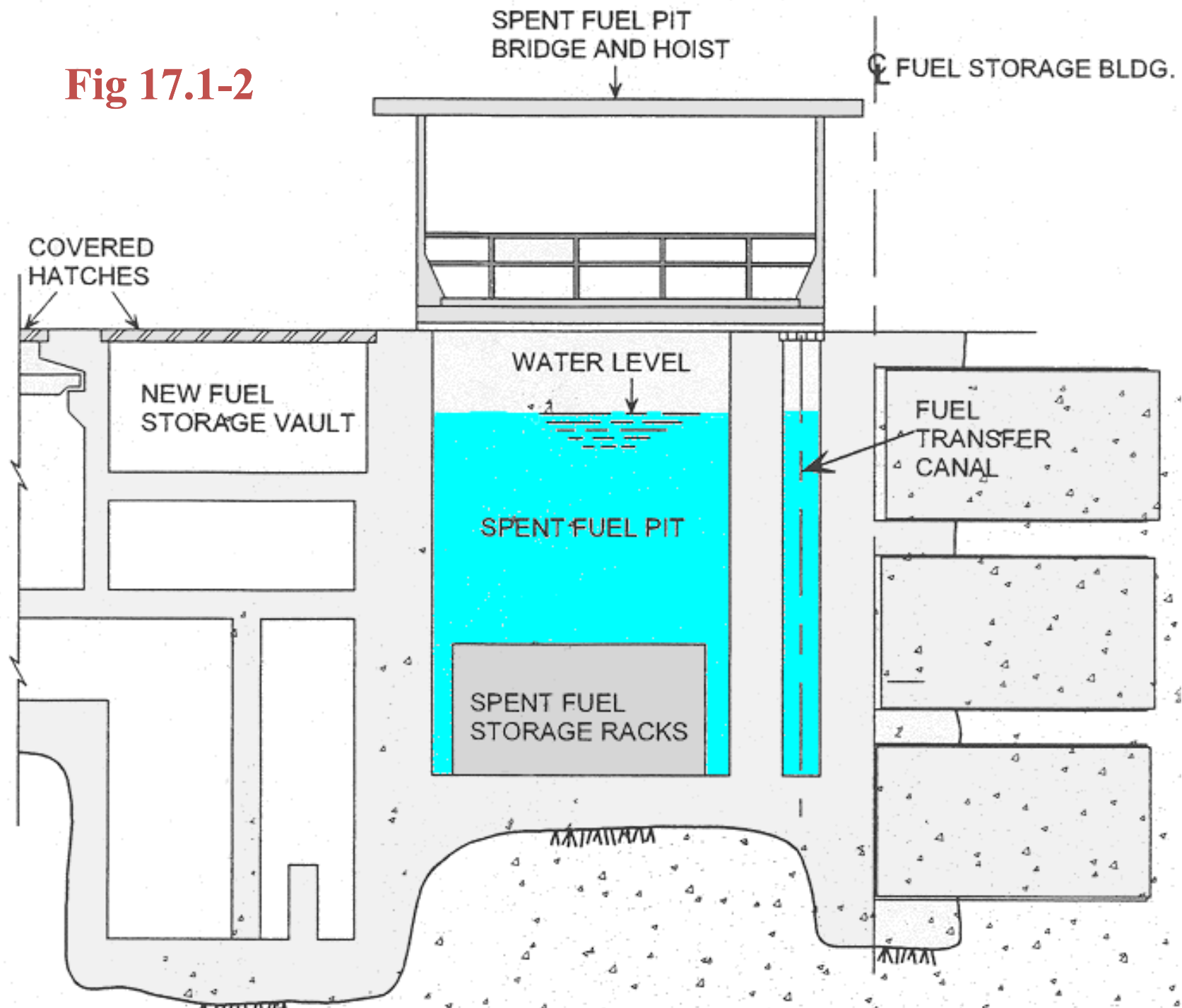
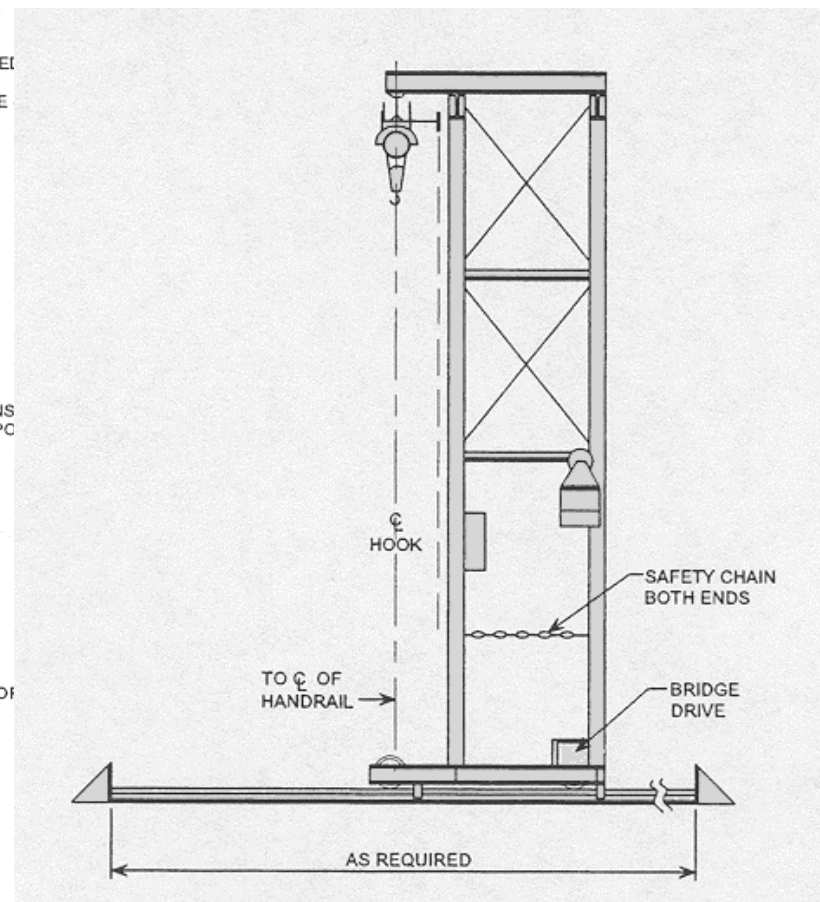
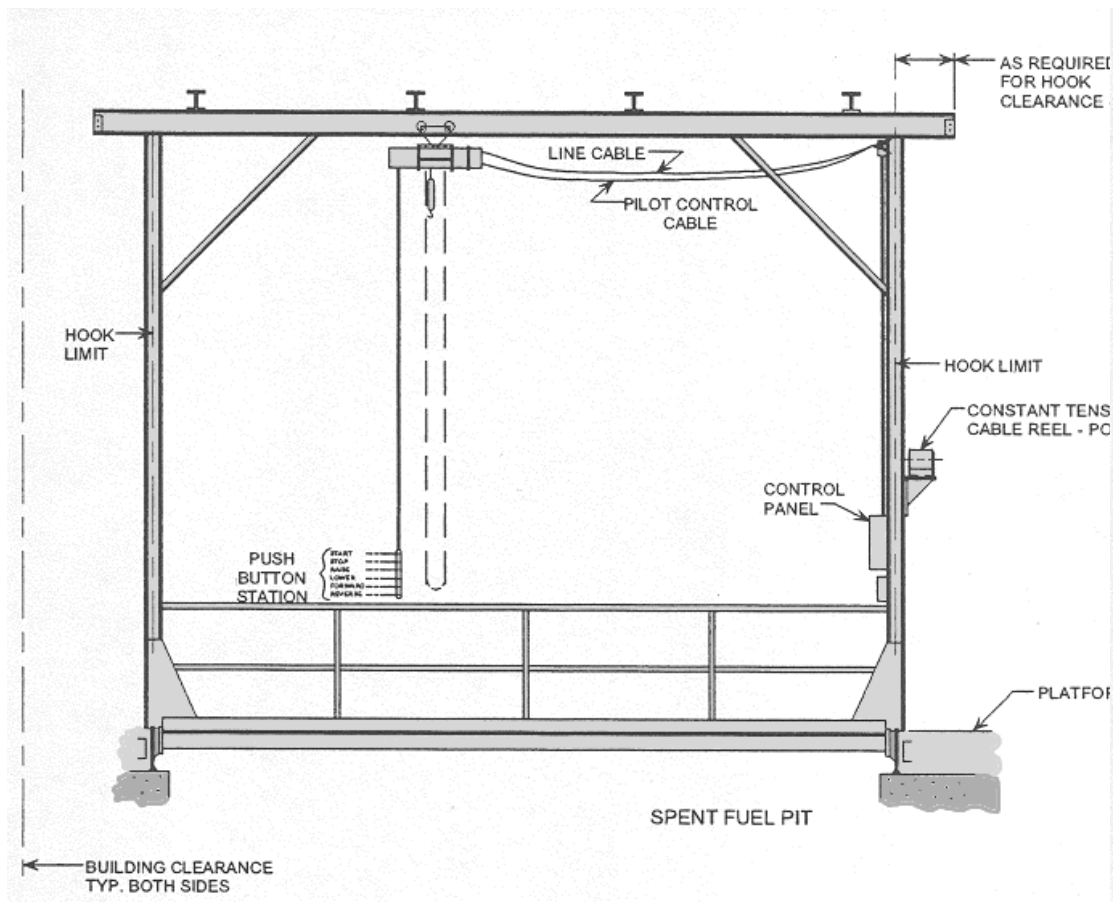


Fig 17.1-2





Spent Fuel Pool Bridge Crane

Fig 17.1-3

Reactor Vessel Stud Tensioner - Obj 2g

17.1.3.2

- Hydraulically operated device used to de-tension (& tension after refueling) the reactor vessel head bolts.
- Normally 3 tensioners are used simultaneously at three studs located 120 degree apart.

Polar Crane

Obj-2d

17.1.3.2

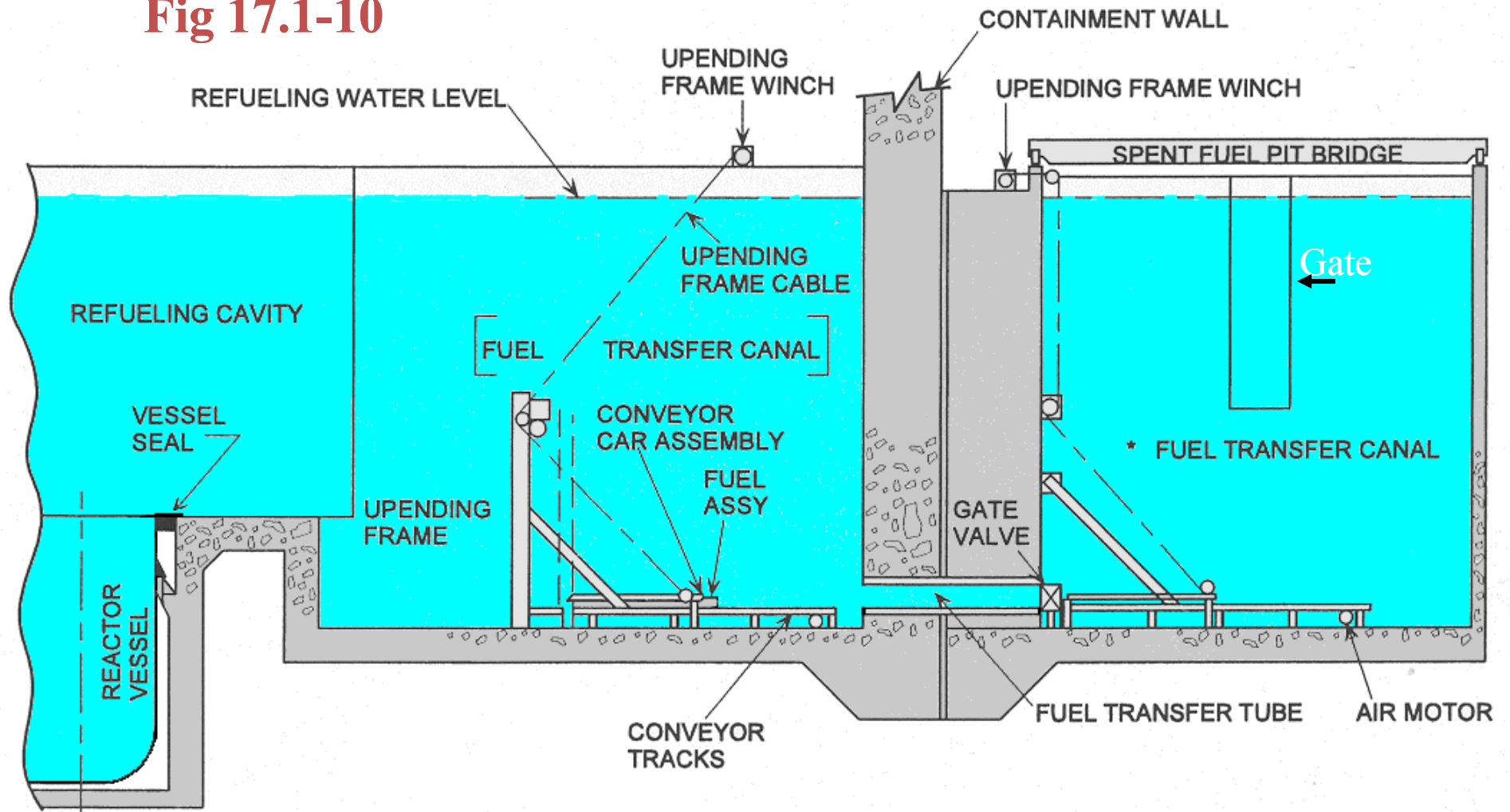
- The Polar Crane is used to move heavy equipment inside the Containment building.
- It is used to move the missile shields, Reactor Vessel Head, and Reactor Internals during refueling operations.
- Special “lifting rigs” are used for these various operations.

Fuel Transfer Canal

Obj 2c 17.1.3.2

- After the Reactor Cavity is filled to the same level as the SFP the Fuel Transfer Tube gate valve is opened.
- The Fuel Transfer Tube connects the SFP to the Containment Refueling Cavity.
- The Fuel Transfer Canal & Fuel Transfer Tube allows the movement of fuel from the SFP to the Reactor Cavity and back.

Fig 17.1-10



Manipulator Crane - Obj 2e 17.1.3.2

- In the refueling cavity the Manipulator Crane is used to remove, replace, and position fuel within the core.
- The manipulator crane moves fuel between the core and the containment side upender.

Manipulator Crane

17.1.3.2

- Is also called the refueling machine.
- Consists of a bridge and a trolley. The trolley runs on the bridge.
- The trolley positions the operator's platform & vertical gripper mast assembly across the refueling cavity.
- The vertical gripper mast assembly consists of a gripper tube which telescopes into and out of the mast.

RCCA Change Fixture — Obj 2f 17.1.3.2

- Used to remove RCCA's and "spider mounted" secondary source assemblies from the spent fuel assemblies and insert them into new or spent fuel assemblies.
- Is mounted on the wall of the fuel transfer canal on the containment side by upender.