RED HILL TANK N0. 19 PRODUCT: JP5

DATE	REMARKS
2/4/51	Cleaned tank. Labor Cost: $1950.20. Material $465.80
12/59	Painted blowers. Labor Cost: $40. Material: $18
8/60	Started conversion of tank under contract No. NBY25540 "Conversion of POL Facilities". Telemetering and high level alarm system installed.
10/2/63	Worked on 30-second timer circuit for fuel and water level telemetering. Tank's digitizer will not pick up. Will be repaired later.
10/8/63	Checked solenoid on fuel gauge digitizer. Switched over pulsating 50 volt circuit to spare telephone lines at tank 19.
10/11/63	Completed repairs to 30-second timer setting on tank's fuel gauge digitizer.
10/14/63	Removed and cleaned buzzing solenoid on vent.
10/22/63	Fabricated valve platform for tank. Installed on 11/15/63.
11/18/63	Blackout of last digit in telemeter on tank's fuel gauge. Defective relay in digitizer. New relay ordered.
6/9/64	Discovered leak around weld in tank bottom. Rewelded leaking area.
8/30/67	Disassembled and rewired data processor units for tank's fuel and water telemetering. Also worked on units for pressure and temperature telemetering.

11/6/67 Repaired fuel gauge amplifier.

11/20/67 Reinstalled and calibrated original fuel gauge amplifier.

9/10/69 Installed 3/4" valve on Hamer blind (8 hours at $4.50).

Labor Cost $36. Material: $95.88

12/18/73 Replaced nipple on 10' sample line.

12/19/73 Made repairs on telltale piping. Cleaned tank.

6/27/74 Emptied tank. Replaced nipple on sample line.

7/74 Received JP5 with FSII.

1/85 Tank cleaned and taken out of service for Automated Fuel Handling System Project by Asteroid Corp.

12/20/89 DD Form 1391 documentation prepared for repair project. (R29-86)

This is a retype of a letter written by Charlie Boerner in June 1964 after leaks were found and

repaired in the lower dome of Red Hill Tank 19.

63.2:CHB:mm

Ser:

From: Director, Pacific Division, Bureau of Yards and Docks

To: Commanding Officer, U. S. Naval Supply Center, Pearl Harbor

Officer in Charge of Construction, Contract NBy 25540

Subj: Contract NBy 25540, Conversion of POL Storage Facilities, Naval Supply Center, Pearl Harbor; leak in Tank #19, Red Hill Underground Fuel Storage, progress in repair of

Ref: (a) CO NSC PEARL ltr code 60 ser code 11162 of 23 Aug 1963 to OICC 14ND

(b) OICC CONTR NBy 25540 ltr 2673 of 10 Sep 1963 to CO NSC PEARL

(c) C. H. Boerner Memo of 26 Nov 1963 to OICC 14ND NOTAL

(d) C. H. Boerner Memo of 3 Jan 1964 to OICC 14 ND

(e) DIRPACDOCKS ltr 63:CHB:mm ser 609 of 13 Feb 1964 to CO NSC PEARL and OICC CONTR NBy 25540

(f) DIRPACDOCKS ltr 63:CHB:mm ser 1295 of 1 Apr 1964 to CO NSC PEARL and OICC CONTR NBy 25540

1. Reference (a) informed the OICC 14ND that a leak had developed in Tank #19 at Red HIll and requested advice in the matter. Reference (b) advised that Mr. Charles H. Boerner of PACDOCKS had been assigned to work with the NSC PEARL Fuel Department to determine the source of leakage and the extent of repairs required. References (c), (d), (e), and (f) are reports of progress in the search for and repair of the leaks.

2. The rate of leakage from the full tank of jet fuel continued at an

average rate of approximately 20 cubic centimeters per 4 hours from tell-

tale #8 during the first 19 days after the end of the last reporting

period. The last reporting period ended 27 March and the tank was main-

tained full until 15 April. The tank was emptied during the period

15 April through 21 April. During this period the leakage rate gradually

dropped from 20 cc. per 4 hours to 3.4 cc. per 4 hours. For the first

15 days after the tank was empty, tell-tale #8 continued to show "leakage"

at a rate which gradually decreased from 3.4 cc. per 4 hours to 1.0 cc.

per 6 hours. Thirteen days later, on 20 May, the rate had dropped to

0.5 cc. per 4 hours. The very small flow from tell-tale #2, less than

2 cc. per 4 hours, continued for only a short period after the end of

the last reporting period and no flow was noted after 4 April. The

decrease in the rate of leakage from tell-tale #8 paralleled the drop-

ing of fuel out of the tank so closely that it appeared to confirm our

previous feeling that a very small leak did exist in the bottom dome.

3. During the 30-day period, 22 April through 22 May, the tank was

washed down and aired out and the central tower hoist was put in

operation in preparation for interior inspections which got underway

in the bottom on 22 May 1964. One-fourth inch diameter holes were

drilled into the lower edge of each sloping plate adjacent to the

three-fourths inch nipple connection to the collector ring tell-tale.

A flow of jet fuel and water was detected in plate #1. This is the

same plate which had shown leakage during contractor's search in 1962-1963. The contractor had rewelded the entire plate including all tell-tale connections. Additional holes were drilled in this same plate, and a flow of jet fuel and water was detected at a point 48 inches above the bottom of the tank measured along the slope of the plate. Other holes were drilled in all plates at the connection to the collector ring and jet fuel was detected behind clockwise numbered plates 2, 3, 4, 5, 11, 35, and 36. All others were dry but the 20-foot diameter bottom plate was wet. These findings indicated only that the leak could be anywhere in the bottom dome but most likely in the area under the catwalk.

4. Compressed air at 2 1/2 PSI was introduced into the collector ring and by visual inspection an oil slick was detected at the "jump-pipe" connection at the top of the second sloping plate in section Number 2. This proved to be a very small leak in the recent contractor's welding at the base of the 1 1/2 inch jump-pipe connection. This leak and all inspection holes were rewelded. Two feet of water was then introduced into the bottom of the tank and a 2 1/2 PSI air test was again applied on the plate, and no leaks were detected. However, after the water was drained, a final check of all welded joints on the collector ring by wire brushing and soaping revealed a leaking weld which evidently had been sealed by the urethane coating. This was a much larger leak than was indicated by the 20 cc. per 4 hours previously showing in tell-tale #8. The leak was rewelded and all rewelds were coated with

Devran.

5. Further visual inspections revealed several oil slicks in the upper dome at the back-up strips between the expansion joint and the spring line in the area of tell-tale #2. These, however, are probably not tank leaks but "leaks" from improper seal welding of the back-up strip during the recent contract.

6. Presently, water is being introduced into the tank to provide access from rafts to inspect at close range and to reweld the back-up strips. The water will also serve as a partial test. To be a conclusive test it would require much more than the 15 day limitation which may not be accepted due to the blistering effect of water on the urethane coating. In discussions with the NSC PEARL Fuel Supply Depot, it was decided that, in order to meet the 15 July 1964 deadline which was recently set, the final "test" would be made by placing the tank in jet service and filling it with jet fuel immediately after completion of the current rewelding and partial test. Close observations of the tell-tales will then be made as in the past.

C. H. BOERNER

By direction

RED HILL TANK NO. 20
PRODUCT: JP5

DATE	REMARKS
8/60	Started conversion of tank under contract No. NBY25540 "Conversion of POL Facilities". Telemetering and high level alarm system installed.
10/2/63	Worked on 30-second timer circuit for fuel and water level telemetering.
10/4/63	Worked on valve in lower tunnel.
10/22/63	Fabricated valve platform. Installed on 11/15/63.
8/30/67	Disassembled and rewired data processor units for tank's fuel and water telemetering. Also worked on units for pressure and temperature telemetering.
9/8/67	Repaired telemeter readout for tank and replaced defective lamp fixture on slave panel in lower section. High fuel indicator was out.
9/21/67	Repaired telemeter.
10/5/67	Traced low voltage on tank's high fuel alarm. Found loose connection on switch terminal in fuel gauge. Removed switch housing and tightened terminals. Tested alarm system. Okay.
11/6/67	Replaced nitrogen cylinder for tank's vent system. Soap tested all fittings for leaks.
9/10/69	Installed 3/4" valve on Hamer blind (8 hours at $4.50). Labor Cost: $36. Material: $95.88.

12/27/71-1/28/72 Cleaned tank. Hosed down catwalk, inside and bottom of

tank. Installed steel ladder and catwalk on elevator tower inside of tank. Installed air winch in tank. Tested elevator and air winch. Cut and removed 8' section of 3/4" telltale pipe from bottom of tank and 6" drain line. Rerouted 3/4" telltale line to manifold. Fabricated and installed 1-1/2" pipe manifold to interconnect eight 3/4" telltale pipes at bottom of tank. Painted newly installed telltale pipes (674 hours). Labor Cost: $3,033. Material: $140.

11/73 Received JP5 without anti-icing compound.

11/73 Emptied JP5 without icing to USS FALCON's tank--223 Mbbls.

8/28/74 Received JP5 with icing.

3/3/79 Sampling tap at 120' level leaking (wired closed).