WPA HISTORICAL SURVEY OF
THE MONTEREY PENINSULA
PROJECT #4080

FILE 114

July 26, 1937

AIDS TO NAVIGATION.

THE DEPARTMENT OF COMMERCE, 18th DISTRICT OF LIGHTHOUSE SERVICE, MAINTAIN THE FOLLOWING AIDS TO NAVIGATION WITHIN THE IMMEDIATE VICINITY OF MONTEREY, CALIFORNIA.

1. POINT PINOS LIGHTHOUSE
2. POINT SUR LIGHTHOUSE
3. CHINA POINT BELL BUOY
4. POINT PINOS WHISTLING BUOY
5. CYPRESS POINT GONG BUOY
6. POINT PINOS ELECTRIC FOG SIGNAL
7. POINT SUR GASOLINE FOG SIGNAL
8. LIGHT ON MONTEREY BREAKWATER

1. POINT PINOS LIGHTHOUSE:

LOCATION - On point south side of entrance to Bay of Monterey.

DESCRIPTION OF STATION - White, black iron tower on dwelling.

The light at Point Pinos is furnished by a third-order fixed lens equipped with an electric lamp which burns continuously. The characteristic of the light is occulting white every thirty seconds, the light interval being twenty seconds and the eclipse period ten seconds. This characteristic is obtained by means of a revolving screen driven by clockwork which occults the light for 10 seconds in each thirty second interval. The light is rated at 2900 candlepower and its geographical range is 15 miles, although its optical range would be considerable greater in clear weather.

2. POINT SUR LIGHTHOUSE:

LOCATION - About 31 miles south of Point Pinos near westerly end of Moro Rock, Point Sur.

DESCRIPTION OF STATION - Gray, square stone tower on fog-signal building.

The characteristic of the light at the Point Sur station is flashing white every 15 seconds, flash 0.6 seconds, eclipse 14.4 seconds. This light is shown through a large first-order flashing lens, driven by clockwork, the light being a 1000-watt electric light supplied by direct current generated at the station. This light is rated at one million candlepower and its geographical range is 23 miles, although its optical range would be considerable greater in clear weather.

3. CHINA POINT BELL BUOY:

LOCATION - About one-quarter mile N.E. of China Point.

A slight action of the waves is all that is required to rock the buoy and cause the bell to strike.

The acetylene lighted lantern is about eight feet above the water and the light flashes white one second and remains in eclipse eight seconds.

4. POINT PINOS WHISLING BUOY:

LOCATION - About one-quarter of a mile N.N.W. of Point Pinos.

The whisling buoy is operated by means of compressed air generated in the long central tube of the buoy by the rising and falling of the buoy on the waves. When the buoy rises on the crest of a wave, there is a reduced pressure on the valve controlling the air intake so that this valve opens and admits air to the central tube of the buoy. When the buoy falls on the receding wave and is more deeply immersed, this trapped air is compressed and forced out through the whistle, which operates at low pressure.

The acetylene lighted lantern is 16 feet above the water, and shows a red flash of one second duration - eclipse of nine seconds.

5. CYPRESS POINT GONG BUOY:

LOCATION - Short distance N.W. of Cypress Point.

The gong is hung rigid in the lower part of the structure and is struck by long clappers hung outside the gong, the action of the waves setting the clappers into motion.

The acetylene lighted lantern is 12 feet above the water and the light flashes white every 10 seconds and remains in eclipse for eight

seconds.

6. POINT PINOS ELECTRIC FOG SIGNAL:

LOCATION - About one-half mile north of the light.

The fog signal at this station consists of an electric siren, mounted near the extreme end of the point and at some distance from the light. It is operated by the keepers by means of a remote control switch at the light station, at which point they stand continuous watches for fog.

The siren sounds a blast of three seconds duration; two seconds interval, three seconds blast, 22 seconds interval - total of 30 seconds.

7. POINT SUR GASOLINE FOG SIGNAL:

LOCATION:- Near westerly end of Moro Rock, Point Sur.

The fog signal at Point Sur consists of two diaphones mounted close together, one pointed up the coast and one down. These diaphones are operated simultaneously by compressed air and sound a group of two blasts every sixty seconds. In addition, the diaphones sound a special long blast every third minute, which has been synchronized with the radio beacon at the station for distance finding purposes. By means of this equipment the master of a vessel taking a radio bearing for direction, and then noting the elapsed time between the receipt of the radio signal and the receipt of the sound signal, can determine his exact direction and distance from the light station at all distances within the range of the sound signal.

8. LIGHT ON MONTEREY BREAKWATER:

The light on the Monterey breakwater is of acetylene gas and is controlled by a sun-valve which turns the gas on at dusk and shuts it off again as soon as the early morning light is strong enough to actuate the valve. These sun-valves are adjusted so as to turn the light on approximately at sun down and to turn it off at sunrise.

In his "Sentinels of the Sea", Francis C. Owen says:

"This patent sun-valve is the invention of Dr. Gustaf Dolen of Sweden and won him a Nobel prize in 1914. In the device two bars of metal of equal volume are used; one is highly polished to reflect light while the other is coated with lampblack and absorbs light. Under the influence of the natural heat carried by light rays, the absorbent metal expands; the reflecting metal does not expand, as it does not absorb the light rays. The expansion of one bar makes the two of unequal length; this difference is utilized to operate a valve, shutting off gas from a light. When darkness comes, the absorbent bar gives up its heat and again becomes of equal length with the polished bar, thus turning on the gas and causing the light to burn brightly."

The lights on the three buoys and on the end of the Monterey breakwater are of acetylene gas. In each case there is a supply of acetylene gas compressed to approximately 225 pounds pressure and stored in steel cylinders which furnishes the supply for the light.

The flashing of the lights is accomplished first by means of a small chamber in the base of the lantern controlled by a reducing valve which admits gas at a low pressure from the high pressure flasks. Then from this chamber the gas is led into a flash chamber controlled by a

delicate valve mechanism which closes until the pre-determined amount of gas in the flash chamber raises the pressure to a certain point, at which time the valve opens and discharges the gas in a short interval of time, say during an interval of one-half or one second, depending upon the characteristic adopted. This gas flows from the flash chamber directly to the burner where it is ignited by a small pilot light which burns continuously, and in this way flashes of any desired length within certain limits can be obtained. The lights on the buoys are operated continuously day and night.

Floating buoys are "worked" every six months; that is, they are lifted, cleaned and painted, the moorings examined and the gas supply replenished if found necessary. Once a year or at six months after being "worked" each buoy is replaced on the station by another buoy of the same type, and the old buoy taken to the lighthouse depot for overhauling, cleaning and repairing. The length of time that a given light will operate on its gas charge depends on the number of gas cylinders used and the characteristic adopted. The large type buoys such as the one used at Point Pinos with a characteristic flash of one second duration every 10 seconds will operate with a normal gas charge for a period of one year. Small buoys with smaller gas supplies or with longer light periods will operate for shorter lengths of time. The average length of time on all outside buoys to operate without recharging is from six months to one year. In the case of shore lights the service period depends upon the number of gas cylinders that may be attached to the installation and these installations usually operate from three months to a year, depending upon the location and the frequency of trips of a lighthouse tender.