

Portland's UHF Test Report

PORTLAND, Ore., is fortunate. Most of its people live in the part of the city that is flat—thus, are capable of receiving "good" uhf TV pictures from KPTV (TV), the first uhf television station in the country, which began commercial operation Sept. 20 [B•T, Sept. 22].

That is the gist of a five-day study of reception made by John P. Taylor, advertising manager of RCA Engineering Products Div. Mr. Taylor rode with an RCA Service Co. truck making spot checks throughout the city and environs of the level of reception of the Ch. 27 signals.

Mr. Taylor found that a Class A signal (74 dbu) extended out roughly 20 miles from the transmitter site on Council Crest, about two miles east of the downtown business center, and a Class B coverage (64 dbu) out about 30 miles.

Due to hills within those contours, the "good" coverage pattern of KPTV's signal takes the form of a rough butterfly outline, with the station's antenna where the insect's head would be.

Six major shadow areas—hills behind which the signal was not good enough for an adequate picture—were found by the RCA testing crew. Major dead area is immediately northwest of the transmitter, due to the elevations of the

same ridge on which the antenna stands. Two other areas are directly northeast and east of the transmitter. One small area is east of the transmitter behind Mt. Tabor. These are all within the city limits. Farther east, outside the city proper, two other shadow areas show up — behind Rocky Butte and Kelly Butte.

Happily, according to Mr. Taylor, the shadow areas involve less than 5% of the population within the city limits and less than 12% of the population of the Portland trading center.

If power is increased, there might well be a decrease in the number and area of shadow spots, Mr. Taylor observed. He figured that if KPTV went up to a radiated power of 100-200 kw, it would adequately cover the whole Portland trading area of 739,400 people.

From other sources it was learned that neighborhood community television systems have sprung up in Portland shadow areas to bring KPTV's signals to hungry TV set owners living behind hills. Who is doing these installations could not be ascertained.

KPTV, owned by Empire Coil Co., New Rochelle, N. Y. (Herbert Mayer, president), parts manufacturer and licensee of WEXL (TV) Cleveland, radiates 16 kw from an antenna which is 1,000 ft. above average terrain.

The 1-kw transmitter and other gear were bought by Empire Coil from RCA-NBC's Bridgeport, Conn., experimental uhf TV station, which was in operation from 1949 to the latter part of last August. The equipment was trucked to Portland from Bridgeport and installed in two weeks. Special 548-554 mc antenna was built at Camden and installed within 24 hours after arriving in Portland Sept. 11.

Station, first in Portland area,

KPTV (TV) STATUS

Now in Black, Mayer Says

MONTH after starting commercial operation, KPTV (TV) Portland, Ore., is in the black, according to Herbert Mayer, president of licensee, Empire Coil Co.

Portland's first TV station—and the country's first uhf outlet—is 80% sold out in Class A time, and 50% sold out in Class B and C time for national and local spots, Mr. Mayer told BROADCASTING • TELECASTING. Station, which began Sept. 20 [B•T, Sept. 22], operates 13 hours daily, Mr. Mayer said, with all network and film programs.

"By the end of the year, we should be as sold out as any station could possibly be," Mr. Mayer declared. He also estimated that Portland will have 75,000 TV sets by Jan. 1, 1953. (On Nov. 1 it had 26,600.)

estimated 26,600 TV sets in the area as of Nov. 1. Prior to KPTV, fringe signals were received in Portland from KING-TV Seattle, 130 miles away.

RCA Service Co.'s determination of a "good" picture was one which just overrode "snow." The average turned out to be about 66 dbu. It is estimated that 95% of the city's 383,700 population and 80% of the 355,700 population outside the city limits gets a "good" picture.

Checks were made on four radials from the antenna—north, east, south and west. A 30-ft. corner reflector antenna, having a gain of 9 db at 500 mc, was used, feeding into a U-70 selector which in turn operated a Model 630 TV receiver.

Key for uhf TV station operation in other cities, according to Mr. Taylor's conclusions, are contained in four factors. They are: (1) antenna height, (2) flatness of terrain, (3) frequency, and (4) population distribution.

Antennas should be at least 500 ft. above average terrain, Mr. Taylor estimated. That is to encompass as much line-of-sight reception as possible, he pointed out.

Terrain is the "predominating limitation on uhf coverage," Mr. Taylor stated. He also described use of shadowgraphs—topographi-

cal map with a small light at antenna site to simulate radiated signals. These show up shadow areas, although it was found that the TV dark area was not as long as indicated by a shadowgraph.

The higher the frequency, the less possibility there is of "fill-in" behind hills and other obstructions, Mr. Taylor observed. He also compared vhf coverage with uhf pattern, determined that although the lower frequencies would cover a far wider area, it would only cover some 6% more people—Channel 27 covers 88% of the Portland trading area population and a vhf channel would cover 94% of the population. However, vhf signals would fill in shadow areas, he pointed out.

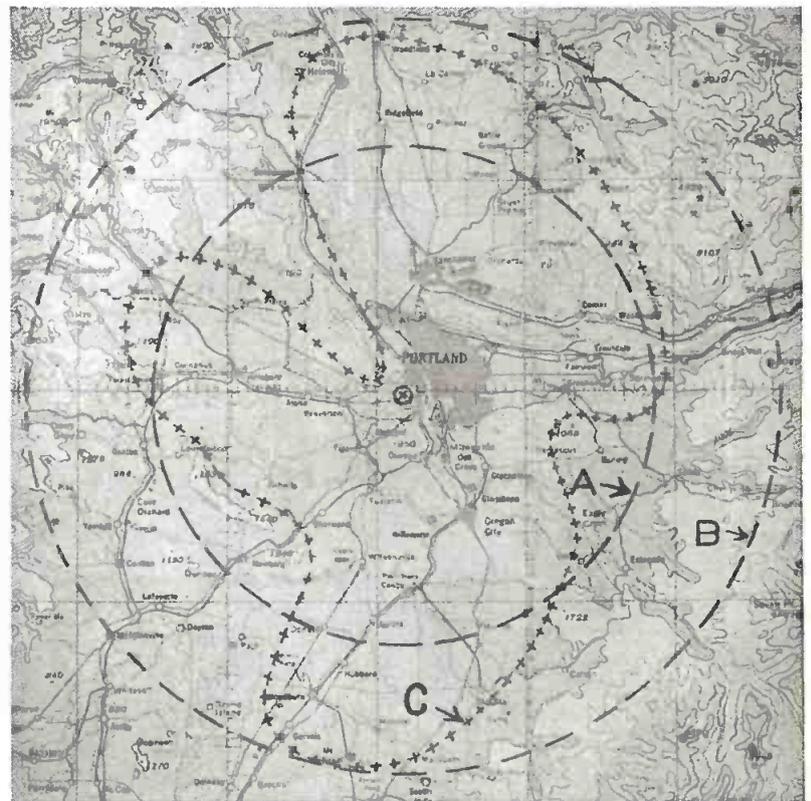
Even in hilly terrain, a uhf station might satisfactorily cover most of the people, Mr. Taylor said, if the residential area was in predominantly flat land. Since TV signals are for viewers, where they live is more important than where the signals go, he implied.

Uhf receiver installations are being easily handled by servicemen, Mr. Taylor found.

A copy of Mr. Taylor's report is available from the Broadcast Section, Engineering Products Dept., RCA Victor, Camden, N. J.



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OUTER limits of KPTV (TV) Portland, Ore., coverage are shown on this topographical map of Portland area. Circle A, having 20-mile radius, corresponds to signal level of 74 dbu (5 mv/m). Circle B, with 30-mile radius, corresponds to signal level of 64 dbu (1.6 mv/m). However, terrain obstacles black out some of these areas, and outline C shows how Grades A and B coverage looks with this factor taken into account.