



Westinghouse's Radio Division pioneered the first production models of the U.S. Army's SCR-270 portable long range radar unit. A system similar to the one shown here picked up the incoming attack at Pearl Harbor on the morning of December 7, 1941.

HHG Detrie L&A, MSS A24, Westinghouse Electric Company Records, Series XVI: World War II, B216, F1, p. 68.

THE SCR-270 - THE ARMY'S
FIRST LONG * RANGE WARNING RADAR

Tuning in for Victory

By Leslie Przybylek, Curator of History

Optimists who see a "silver lining in every cloud" are wondering whether the war of today presages some sensational development in radio as it did in the first World War.

- *The Pittsburgh Press*, November 13, 1941

In November 1941, *The Pittsburgh Press* recalled that Westinghouse's radio research for World War I paved the way for KDKA's milestone of national broadcasting that began November 2, 1920. Now, observed the *Press*, "Twenty-one years later Westinghouse radio production plants are working day and night turning out precision broadcasting and receiving sets for Uncle Sam."¹

Radio equipment was only part of Westinghouse's contribution to World War II. At the height of war production, the company employed more than 100,000 people and made 8,000 defense products. From massive turbines and ship generators to helmet liners and electric torpedoes, Westinghouse epitomized what company leaders called "the great drive of science and industry" to supply, fight, and win a new kind of war.² That effort also included communications technology: radio and radar devices that created a vast electronic network to keep enemies under surveillance and maintain contact between U.S. forces spread across land, air, and sea. A Westinghouse GP-7 radio transmitter and tuning unit, on loan from the Smithsonian Institution's National Air and Space Museum and on display in *We Can Do It! WWII*, symbolizes the role of Westinghouse's Radio Division during the war. One of more than 12,000 GP radio units Westinghouse produced for the U.S. Navy

through 1944, the transmitter enabled communication between navy ships and aircraft, including the navy's Douglas SBD Dauntless, a carrier-based dive-bomber that devastated Japanese forces during the Battle of Midway.³

Westinghouse's Radio Division also epitomized the logistical pragmatism that earned the company lasting commitments from federal contractors. Before the war, Westinghouse split radio development between offices in Pittsburgh; Chicopee Falls, Massachusetts; and Baltimore. As demand for military electronics increased, officials in Pittsburgh recognized that members of the Baltimore office had become key radio experts for the U.S. Navy. The company centralized radio operations there, moving about 250 employees from Massachusetts and Pittsburgh to Maryland. The Radio Division's proximity to Washington, D.C., eventually made it Westinghouse's primary Defense Division facility.⁴ Another report suggested the reorganization was spurred by Westinghouse's knowledge of ongoing military radar research and the potential of large federal contracts.⁵ Pittsburgher Walter Evans, acting as general manager for the Baltimore plant, observed in 1941 that it became "almost a 100 per cent defense factory."⁶ He noted: "Our employment roster is five times as large as it was only two years ago."⁷

It wasn't enough. Navy demands for radio equipment eventually outstripped Baltimore's production capacity. Westinghouse again reached out nationally, establishing radio facilities in Landsdowne, Maryland; Sunbury, Pennsylvania; Springfield, Massachusetts; and Mansfield, Ohio. Between 1939 and 1945, employment in the Radio Division jumped from 500 to 6,000; plant area expanded nationwide from 60,000-square-feet to 925,000-square-feet.⁸

While the GP-7 transmitter exemplified Westinghouse's importance to the navy, the Radio Division also made a legendary contribution to the U.S. Army. As early as 1933, Westinghouse electronics engineers experimented with radio signals beamed from the company's Research Laboratories in Forest Hills to the East Pittsburgh works. Similar to German and U.S. military experiments, they detected road traffic moving between the facilities by observing how signals were interrupted. These tests demonstrated the idea behind radar: the detection of objects through the reflection of radio sound waves. At the same time, experiments in radio waves and object detection were being spearheaded by the U.S. Army Signal Corps Research Laboratory at Fort Monmouth, New Jersey. By 1939, the Westinghouse Radio Division, working with Fort Monmouth, manufactured the U.S. Army's first standardized radar system, known as SCR-270 / 271.⁹ By 1941, the Radio Division in Baltimore had constructed 108 of these units. Four, all portable SCR-270 models, were sent to Hawaii.¹⁰

At 7:02 a.m. on December 7, 1941, soldiers operating one of these units at a U.S. Army Signal Corps radar training station at Opana Point, Oahu, picked up the "largest blip" they'd ever seen. They notified their superiors.¹¹ But radar was new; few army personnel had trained in it. There was little precedent for predicting an attack. Skepticism greeted the warning. Perhaps planes were coming from the *USS Saratoga*? Perhaps B-17s were approaching from the mainland? Regardless, the report was not passed forward. Fifty-five minutes later, Japanese planes attacked Pearl Harbor. Historians will long debate whether the warning truly would have



The GP-7 radio transmitter was used to communicate with the U.S. Navy's carrier-based Douglas Dauntless dive bomber. Here, a Dauntless from the USS *Yorktown's* bombing squadron VB-5 flies over Wake Island in October 1943.
National Archives and Records Administration.

helped, but for Westinghouse it was a crucial milestone: the SCR-270 successfully detected incoming enemy planes. An experimental technology had come of age.

As World War II progressed, demands for radar and radio equipment continued to expand even as people began envisioning new uses for them after the war. Eventually, Westinghouse's Radio Division focused on radar. Befitting this shift, by February 1945 the Division reorganized again. Home radio production went to Sunbury, Pennsylvania. The Baltimore office gained a title that looked to the future: Industrial Electronics.¹² So the Radio Division name carried by the GP-7 radio transmitter now on display in *We Can Do It! WWII* lasted only about five years, from around 1940 to 1945. But during that period, it epitomized Westinghouse's leading role in naval aviation communications and pointed the way toward new technology that would engage the company into the Atomic Age.



The Westinghouse GP-7 radio tuning unit and transmitter on display in *We Can Do It! WWII*.
Smithsonian Institution's National Air and Space Museum. Photo by Rachellynn Schoen.

¹ Si Steinhauser, "War Puts Radio to New Test," *The Pittsburgh Press*, November 13, 1941.

² David O. Woodbury, *Battlefronts of Industry, Westinghouse in World War II* (New York: John Wiley & Sons, Inc., 1948), 2.

³ *Westinghouse in World War II*, Radio and X-Ray Divisions, Book 1, October 1946, p. 45, HHC Detre L&A, MSS 424, Box 216, Folder 1.

⁴ Woodbury, *Battlefronts*, 95-96.

⁵ John M. Hightower, "Secret Super Weapon: Mass Production of Radar Brought Electronics of Age," AP article *Ellensburg (Washington) Daily Record*, June 26, 1943.

⁶ Steinhauser, "War Puts Radio to New Test," *Pittsburgh Press*, November 13, 1941.

⁷ Ibid.

⁸ *Westinghouse in World War II*, Radio and X-Ray, p. 2.

⁹ Ibid., 101.

¹⁰ Ibid.; Eric Siegel, "Museum to exhibit type of radar used during attack on Pearl Harbor," *The Baltimore Sun*, December 3, 1991, accessed August 5, 2015: http://articles.baltimoresun.com/1991-12-03/features/1991337100_1_attack-on-pearl-radar-system-pearl-harbor.

¹¹ *Westinghouse in World War II*, Radio and X-Ray, p. 5; Woodbury, *Battlefronts*, 104-105; Siegel, "Museum to exhibit type of radar"; and Floyd Hertweck (Staff Historian, CECOM LCMC), "'It was the largest blip I'd ever seen': Fort Monmouth Radar System Warned of Pearl Harbor Attack," article originally published in the *CERDEC Monthly View* (July 2009), accessed August 5, 2015: http://cecom.army.mil/historian/pubArtifacts/Articles/2010-01-01_0900-FILE-CERDEC%20Monthly%20View%20July%202009%20-%20SCR%20270.pdf. The drawing of the original radar plot made with the readings from the Opana Point Detector Station, now part of the collection of the National Archives and Record Administration, can be viewed online, accessed August 5, 2015: <http://www.archives.gov/legislative/features/day-of-infamy/> and <http://www.archives.gov/legislative/images/pearl-harbor-radar-plot.jpg>.

¹² "Westinghouse Radio Divisions Renamed," *Pittsburgh Post-Gazette*, February 22, 1945.