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ARTHUR D. LITTLE, INC.

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October 20, 1943.

Progress Report Covering Period from September 20 to October 15 on Development of Test Unit for Production of Oxygen by a Regenerative Chemical.

The shipboard regenerative-chemical oxygen unit developed at Arthur D. Little, Inc. has been installed aboard the U. S. S. Prairie during the period covered by this report.

Initial operation aboard ship was satisfactory from a mechanical viewpoint. At the time of this writing no cutting and welding work has been done aboard ship with the oxygen.

In brief, the installation may be described as follows: The unit occupies one corner of the boiler shop. Steam, air, sea water and 440, 3 ph., 60-cycle, electric power were all available close at hand. The drains from the reactors, traps, air cooler and fresh water-sea water exchanger run through the deck into a main 3 inch header in the overhead of the deck below. This header fits into one of the ship's 6 inch drains. A check valve is provided to prevent waste in the drain backing up into the unit. Exhaust air is discharged through the side of the ship.

Oxygen from the compressor passes out through the side of the ship into a 3/4 inch copper tube header. This header runs in the overhead of the outside passageway of the main deck. It runs from well forward on the port side of the ship, back along the port side, around the stern and forward to about amidship on the starboard side. Floating on this line are five storage tanks also in the overhead of the passageway. A total storage capacity of about 68 cubic feet has thus been furnished.

Twelve stations have been provided for the use of the oxygen. These are distributed about the ship. Over half of them are on the outside of the bulkhead of the main deck over the side of the ship. The remainder are located in shops, such as the battery shop and the machine shop.

An air cooler was added to the unit. Indications were that the ship was definitely not to return to Newfoundland, as originally anticipated. In order to get the best possible operation in hot climates, it was felt that the air should be cooled as much as possible. Sea water will be used as the cooling fluid.

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Respectfully submitted,

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