THE PENNSYLVANIA RAILROAD

LOCOMOTIVE MAINTENANCE INSTRUCTIONS NO. L-57

Philadelphia, Pa.
September 29, 1945

INSTRUCTIONS FOR BLOWING DOWN LOCOMOTIVE BOILERS

GENERAL

(These instructions are effective only in territories specified by the General Superintendent Motive Power)

All locomotive boilers are provided with one or more of the blowdowns listed below:

(a) Automatic, which operate only when throttle is open.

(b) Manually operated from cab, with outlet in rear water leg.

(c) Manually operated from running boards with outlets in side of water legs.

(d) Manually operated from ground with outlet in throat sheet.

INBOUND ENGINEHOUSE PROCEDURE

The following instructions shall be followed for all inbound locomotives, except -

(a) When it is known that the boiler is to be washed.

(b) When it is known that boiler is to be drained and refilled, account other operations.

(1) Locomotives should arrive at terminals:

(a) With water level within 1" or less below top of water bottle glass.

(b) With fire in good condition.

(c) With steam pressure at least 75% of working pressure.

(d) With concentration not more than 125 grains per gallon.

(2) Sample of water shall be taken from all locomotives according to the following procedure:

(a) Drain water column, valve to remain full open for at least 10 seconds after water disappears from water bottle glass.

(b) Close valve and allow water bottle to refill.

(c) Blow out gauge cock to remove old water.

(d) Collect sample from bottom gauge cock by means of cup shown on attached print of Sketch No. F-726. The injector or boiler feed pump should not be operated when sampling water.

(3) Testing Samples:

Samples as taken above shall be tested for concentration, the method of making the test varying with the type of instrument used. Instructions are included with each instrument and test should be made exactly in accordance with these instructions.

(4) Allowable Concentration:

(a) The concentration of water in boilers on arrival should not exceed 125 grains per gallon.

(b) If the concentration is greater than 125 grains per gallon on arrival, the blowing down on the road has been insufficient.

(c) If the concentration has reached 160 grains per gallon on passenger locomotives, or 200 grains per gallon on road freight locomotives; the boiler must be drained and refilled.

(5) Insufficient Blowdown:

(a) When a locomotive equipped with automatic blowdown shows a concentration of more than 125 grains per gallon on completion of its run, the blowdown equipment should be checked for orifice size or defective valve and defects found corrected before dispatchment.

(b) When a locomotive is equipped with a cab operated blowdown, with or without automatic blowdown, and is turned in at the terminals with a concentration of more than 125 grains per gallon, it is evident that the crew has not given the condition of the water sufficient blowdown attention enroute. The Enginehouse Foreman should report such cases to the Road Foreman of Engines.

(6) Blowdown:

(a) With water level within 1" or less of the top of water bottle, blow down boiler until water is within 1/2" of the bottom of glass in water bottle, using throat sheet blowdown. Refill boiler to within 1" or less below top of water glass.

OUTBOUND ENGINEHOUSE PROCEDURE

(7) Locomotives shall be in condition as below before taking sample:

(a) Boiler filled with water level within 1" or less below top of water bottle glass.

(b) With fire in good condition.

(c) With steam pressure not less than 75% of working pressure.

(8) Sample of water shall be taken with locomotive in condition as specified in paragraph 7 above, following the same procedure as outlined in paragraph 2 above.

(9) Test sample as per paragraph 3 above.

(10) Blow down as per paragraph 6 above and repeat, if necessary, until concentration of 100 grains per gallon or less is obtained.

(11) (a) If inbound tests show repeated blowdowns will be necessary, such blowdowns may be made inbound instead of outbound at the discretion of the Enginehouse Foreman.

(b) The important point is that locomotives shall not be dispatched with a concentration of more than 100 grains per gallon.

ROAD PROCEDURE - ALL LOCOMOTIVES

(12) When train is stopped enroute for coal or water, the following procedure shall be followed:

(a) Fill boiler, with water level to within 1" or less of top of water bottle glass.

(b) Shut off injector and boiler feed pump.

(c) Blow down as outlined in paragraph 6 above and repeat as often as is necessary.

ROAD PROCEDURE - LOCOMOTIVES EQUIPPED WITH CAB OPERATED BLOWDOWN

(13) On locomotives equipped with blowdown which can be operated from the cab, the same procedure shall be followed while moving, except that injector or boiler feed pump should not be shut off when blowing down with engine working steam.

(14) When train is stopped for reasons other than taking coal or water, or station stop, the following procedure shall be followed:

(a) The blowdown shall be opened wide just prior to starting for at least twenty seconds.

(b) After again starting, the boiler should not be blown down until a speed of at least eight miles per hour has been attained.

(c) All blowing down, unless engine is working steam, should be done with injector and boiler feed pump shut off.

(15) Do not neglect blowing down because of light train or because boiler has just been washed or has had the water changed. Such neglect may leave the water in bad condition for the next run, which may be with a heavy train.

(16) Best results are obtained in correcting a foaming condition by blowing down the boiler while working steam.

ROAD FOREMEN

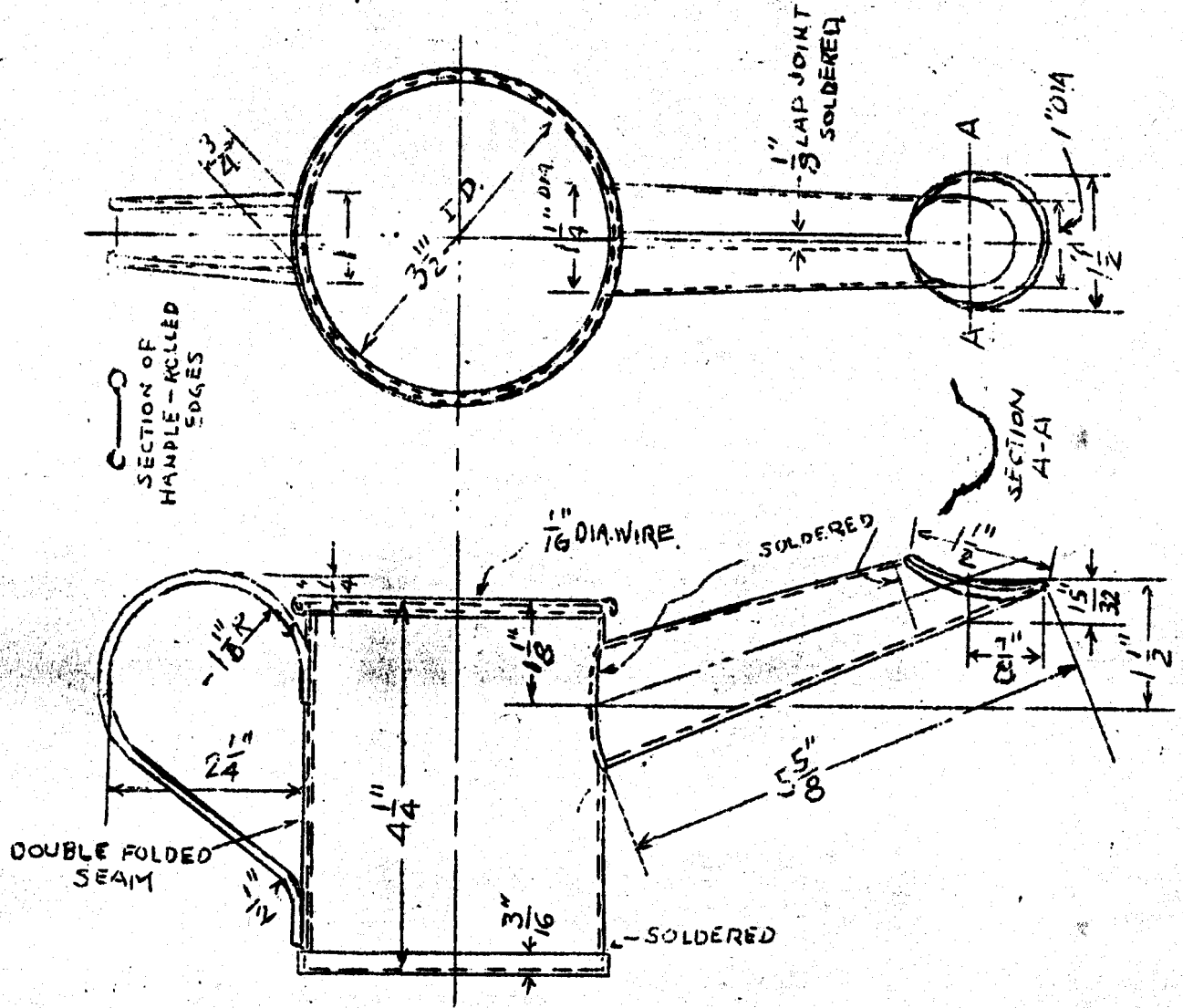
(17) Road Foremen shall designate specific points in their respective territories where boilers equipped with cab operated manual blowdown are to be blown enroute. These blowdown locations shall be approved by the General Superintendent Motive Power of the respective Regions and the Road Foremen shall conduct periodic efficiency tests to assure themselves that the instructions are being carried out.

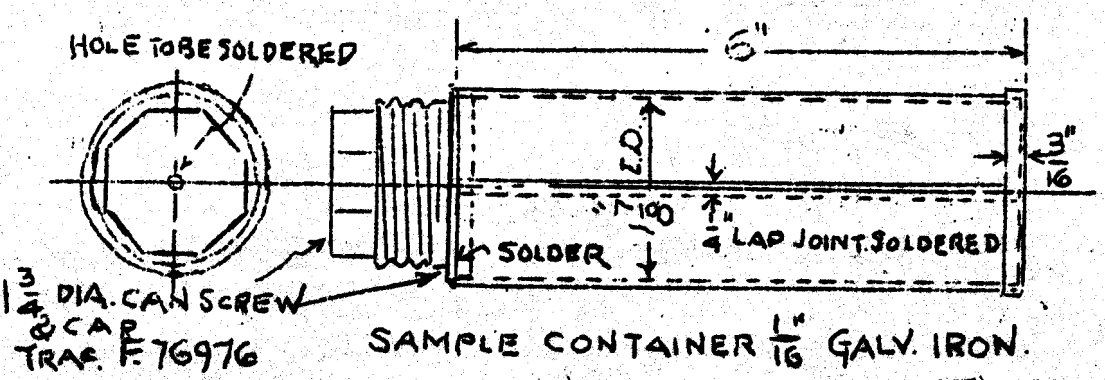
When Road Foreman of Engines receives report that blowing down enroute has been neglected, he shall take such action as may be considered necessary to prevent recurrent neglect of proper road blowdown.

H. W. JONES.
Chief of Motive Power.

CAN FOR TAKING SAMPLE OF WATER FROM LOCOMOTIVE GAUGE COCK.

Office G.S.M.P. - Pittsburgh, Pa 11-28-1941.





SAMPLE CONTAINER 1/16 GALV. IRON.

SKETCH NO. F-726-A.