SUBJECT TANK SPRAYING OF CATHODES

(Initially for FKW60F602-600B) for 832A)

A. EQUIPMENT

Refer to Model No. L-782-AB in Equipment Development Department.

B. SETTING UP

1. Roll bottles of spray continuously for a minimum of 14 hours before use.
2. Strain spray through a 400 mesh screen.
3. Fill spray tank to three gallon level.
4. Check system for leaks.
5. Set air pressure on tank. (Note: Pressure to be checked thereafter at two 1/2 hr. intervals. It should not vary more than ±1/2 psi.).
6. Set air pressure on gun. (Same note applies as in step #5).
7. Set agitator screw at 1/4 - 1/2 turn.
8. Switch on exhaust fan.
9. Break down and clean gun according to the following procedure.

    (a) Remove needle carefully.
    (b) Remove air cap and fluid tip.
    (c) Clean air cap holes, using pipe cleaner and acetone.
    (d) Examine fluid tip microscopically for defects in inside and outside circles.
    (e) Examine needle microscopically for bend and wear.
    (f) Check packing to insure against leaks.
    (g) Remove dirt and hardened spray from gun barrel with pipe cleaner and acetone.

10. Assemble gun according to the following procedure.

    (a) Assemble and tighten fluid tip and air cap.
    (b) Insert needle carefully
    (c) Check concentricity of fluid tip, needle, and air cap hole through a magnifying glass.

11. Check spray pattern according to the following procedure.

    (a) Spray a pattern about two inches high on a piece of black cardboard or bakelite placed in the bar holder.
    (b) Make necessary gun adjustments to give a narrow ellipse as a pattern.
    (c) Center spray pattern and level air cap holes to straighten spray pattern.
    (d) Check gun for leaks.

12. Take volumetric check according to the following procedure.

    (a) Using tank pressure only, allow spray to flow through gun for 30 seconds into a graduated cylinder.
    (b) Adjust tank pressure and gun opening until a volume of 10 to 15 cc is obtained by step #12 (a).

B. SETTING UP (cont'd)

13. Set the following factors the same as were used to give the last satisfactory spraying run.
    (a) Distance of gun to cathode.
    (b) Gun pressure.
    (c) Nozzle setting.
    (d) Rate of passes.

14. Test set up by following method. (Note: Production spraying should not be started until three consistent and satisfactory test bars have been obtained.)
    (a) Spray a bar containing six good cathodes in the center surrounded by scrap cathodes.
    (b) Check weight, M.O.D., texture, and spray length of test cathodes #1 and #6.
    (c) Make necessary setting adjustments to give desired texture and measurements and repeat steps #14(a) and #14(b) until three consistent and satisfactory bars have been obtained.

15. Start production spraying using necessary setting as determined by step #14.

C. SPRAYING

1. If, in the course of spraying, results of inspection show that spray density is satisfactory, but that weight and M.O.D. are running consistently above or below limits, the following steps should be taken.
    (a) Turn off gun pressure.
    (b) Take volumetric check as outlined in Section B.
    (c) Increase or decrease, whichever is necessary, the spray volume by adjusting tank pressure or gun opening or both.
    (d) Repeat volumetric check until the desired results are obtained.
    (e) Turn on gun pressure.
    (f) Resume spraying.

2. If the results of inspection show that the spray density is running on the high or low side, i.e., high weight and low M.O.D. or vice versa, even though within specifications, gradual adjustments should be made in the set up to center the density. The following is the preferred order of adjustment.
    (a) Nozzle setting.
    (b) Distance gun to cathode.
    (c) Gun pressure. (Note: Tank pressure will also have to be adjusted in this case).
    (d) Rate of passes.

3. Clean air cap holes, fluid tip, and needle immediately before each bar sprayed. This cleaning should be done with a bristle brush and acetone. The gun does not have to be dismantled.

C. SPRAYING (Cont'd.)

4. Clean spray bars frequently using motor driven brush.
5. Keep spray booth and bar holder free from loose and hardened spray by frequent brushing.

D. SHUTTING DOWN

1. Turn off air pressure on gun and tank.
2. Release air from tank by pulling air release.
3. Break down and clean gun according to the following procedure.

   (a) Remove needle carefully.
   (b) Remove air cap and fluid tip.
   (c) Clean air cap holes using pipe cleaner and acetone.
   (d) Examine fluid tip microscopically for defects in inside and outside circles.
   (e) Examine needle microscopically for bend and wear.
   (f) Check packing to insure against leaks.
   (g) Remove dirt and hardened spray from gun barrel with pipe cleaner and acetone.

4. Assemble gun according to the following procedure.

   (a) Assemble and tighten fluid tip and air cap.
   (b) Insert needle carefully.
   (c) Check concentricity of fluid tip, needle, and air cap hole through a magnifying glass.

5. Thoroughly clean spray booth and bar holder removing all loose and hardened spray.

6. Empty and clean tank and hose according to the following procedure.

   (a) Speed up agitator for a few minutes.
   (b) Turn off exhaust fan.
   (c) Turn off agitator.
   (d) Empty spray material remaining in tank into gallon bottles.
   (e) Place bottles on rollers. (Note: The contents of these bottles should be added to the batch for the next spraying run).
   (f) Clean tank out with methanol.
   (g) Clean hose by forcing clean methanol through it with air pressure.

E. EQUIPMENT CHECK

1. Spraying equipment must be checked periodically for corrosion, contamination, etc.
2. The spray delivered to the gun must be analyzed for contamination material which may affect the sprayed cathode product, i.e.,oil, rubber, metal, and any other foreign and contaminating material. This analysis will be performed by the M & P Laboratory at intervals determined by data collected.

F. INSPECTION OF CATHODES

1. At beginning of each shift check measurement devices as follows:

   (a) Check balance against standard weights within cathode weight range.
   (b) Check micrometer against standard gauges within cathode diam. range.
   (c) Adjust instruments or allow for deviations in all measurements.

2. Examine each bar of cathodes microscopially for spray texture

3. Inspect each bar of cathodes for spray dimensions according to the following procedure.

   (a) Select a cathode from near the center of the bar and weigh it on the torsion balance.
   (b) Take the same cathode and, using a micrometer, measure the sprayed dia. in three places, center and each end. (Note: In the case of cathodes which have a sprayed length of 15 mm. or less, only one measurement is made and that is in the center).
   (c) Remove the spray from the cathode and, using a micrometer, measure the uncoated diameter in the center.
   (d) Weigh the uncoated cathode on the torsion balance.
   (e) Subtract reading "c" from reading "b" and reading "d" from reading "a".
   (f) If either or both the spray weight and the coated diameter are over specification, reject all the cathodes in the bar.
   (g) If both the spray weight and the coated diameter are under specifications, add more passes and reinspect.
   (h) If both spray weight and coated diameter are within specification, select a cathode from each end of the bar and, using a micrometer, measure the coated dia. in the center of each of these cathodes.

      1. If the coated diameter of both of the end cathodes is within specifications, the entire bar may be passed as far as spray dimensions are concerned.
      2. If the coated diameter of either or both of the end cathodes is out of specifications, the bar may either be rejected or detailed for 100% inspection.

4. Inspect cathodes which have passed spray dimension inspection for any visible defects and reject all bad ones.
5. Pack cathodes in single layers in cardboard trays containing corrugated paper in the bottom.
6. Place in each tray of cathodes, a slip of paper containing (1) cathode number, (2) quantity, (3) spray weight, (4) coated diameter, (5) date inspected, and (6) inspector's name.

NOTE: A complete record must be kept by the inspector of the results obtained from the foregoing inspection. This record will also contain the spray lot and settings used on each bar of cathodes.

SCHEDULE #1

Range of setting to be used in tank spraying of 829B, 3E29, & 832A Cathodes.

SPRAY APPLICATION	1st	2nd
Passes per side of bar	8-20	8-20 §
Spray Material	33-C-131	33-C-131
Gun Pressure (psi)	30-60	30-60
Tank Pressure (psi)	6-10	6-10
Nozzle setting (on dial)	10-20	10-20
Gun opening (turns)	1/2-5	1/2-5
Distance Gun to Cathode (inches)	6-1/2-9	6-1/2-9
Total number of passes	16-40	16-40
Rate of passes (metronome setting)	60-70	60-70
Drying time after each application (250°F)	5 min.	5 min.

§ The number of passes in the two coats should be, as nearly as possible equal and in no case should the number of passes in one coat be more then twice the number in the other coat.

STANDARDIZING SECTION
ENGINEERING DEPT.