

BPL PROCEDURES DOCUMENT

MANUFACTURE OF CUP HOLDER FOR PORTABLE MISSION CONTROL UNIT
DOCUMENT 00247

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MANUFACTURING DIVISION, DEPARTMENT OF ROUGH SHAPES
BROOKLYN NAVY YARD FACILITY



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TABLE OF CONTENTS

| | |
|----------------------------|---|
| DESIGN OF CUP HOLDER..... | 3 |
| MANUFACTURING PROCESS..... | 4 |
| APPENDIX..... | 8 |

DESIGN OF CUP HOLDER

In the process of designing the Portable Mission Control Assembly, BPL Management has determined that a cup holder should be fitted to the front of the work area. The central purpose of the holder will be to prevent accidental release of harmful liquids in the normal course of use of the Assembly. While some in the Design Division pushed to institute a ban of drinks during operations, Management made the determination, after survey 0065, August, 2007, that drinking would be necessary during long missions and should not only be available to operators of the unit, but to guests as well. A safe practices specification has been issued regarding the handling of liquids around the Portable Mission Control Assembly (see Appendix).



The cup holder is located at the top of panel 3. It has a capacity of two individual cups of average "take out" or "travel mug" dimensions, with a maximum total weight of 4 pounds. One

of the openings is for the operator of Mission Control, and the other is reserved for guests. Disputes over the occupation of the openings is beyond the purview of this document, which is one reason why the number of openings was kept to a minimum.

The cup holder is made of 6061 aluminum and is approximately 6.0" X 3.0" X .25". It is attached to the top of panel 3 by an aluminum piano hinge. It has two positions: Up, and Down. In the Up position, the holder rests on the Top Work Surface of the Assembly. Cups may be placed in the openings in this position but they may not fit exactly into their intended positions, leading to a hazardous condition. The proper use of the Up position is to make panel 3 more accessible when drinking is not taking place. If drinks are being consumed or just left to congeal, the cup holder should be deployed in the Down position. The Down position is approximately 150°CW to the UP position, which places the cup holder's openings roughly parallel to the Lower and Top Work Surfaces. In this position, the liquid tends to remain within the local horizontal and in its cup. Flexing of the unit in the vicinity of the hinge is minimized by allowing the hinge fasteners to ride against each other when in the Down position.

MANUFACTURING PROCESS

1. Square up a block of 6061 T6 aluminum to 6.00" X 3.00" X .250" on Induma mill.



2. Lay out circles to be cut on 1.50" centers from the front and left edges. Go to Medical Cabinet and select a bandage for



cut on thumb developed by foolishly rubbing against edge of block.

3. Set up block on Induma mill and center over first circle. Cut 1.375" circle through block.

4. Stop to clear excessive ribbon of waste material. Retrieve another bandage and apply as needed per step 2.

5. Center and cut opening 2 as in step 3.



6. Deburr piece per Deburring Procedure, Document 0015.
7. Cut an oversized length of MS-0063-15 aluminum hinge.
8. Lay out three #28 holes on bottom leg of hinge and drill through.
9. Align holes on Cup Holder block and spot. Drill and tap three holes for #6-32 screws, #36 drill, .750" deep.



Countersink with 82° bit.

10. Join hinge to block with three #6 SS oval head machine screws.
11. Align block to 1.00" distance from right edge of Top Work Surface. Drill three #28 holes through hinge and panel 3.
12. Attach cup holder with hinge to panel 3, using 1" SS button head machine screws, washers and locknuts.
13. After checking fit, remove unit and mill hinge to block length minus .063" on left and right sides. Leave pin to block length, and replace unit on panel 3, per step 12.
14. Finish per specification 005, and test unit with two cups

of coffee, then two cups of Tang. Flip unit back and forth repeatedly. Try out different cups. Place 4 lb. calibrated



test weight on unit, then check for stress cracks or bending.

15. Sign documents and mark unit.

APPENDIX

A. SAFE PRACTICES SPECIFICATION, CUP HOLDER.

The cup holder is generally safe to use, especially with common sense as an ally. The unit should be cleaned along with the rest of the Portable Mission Control Assembly periodically, to prevent spread of infectious microbes and incurable diseases.

Horseplay should not be permitted around cup holder, as some of its parts could cause injury or death if misused.

The cup holder should be used only for holding cups; not for holding hats, microphones, cameras, banners, or little plastic trolls.

It is advisable for Mission Controllers to establish a routine regarding the occupation of the cup holder's openings. Each person using the Assembly should know and understand which cup is his own, and respect other's rights. Cups should not be thrown out without an attempt made to locate their owners, regardless of the condition of the contents. If disposable cups are used, it is advised that personnel mark their cups in an individual way, such as a little dot with a sharpie, or a post-it-note with the owner's name, or perhaps a drawing of a flower or a cat. Finally, individuals should take responsibility for thier cups, keep them clean and the area tidy. Spills should be dealt with according to Spill Procedure (document 0348), and reported properly. The cup holder is an option, and if its presence becomes a nuisance or a hazard it can be removed.