

TECH.-9

# CONFIDENTIAL SECURITY INFORMATION

NATIONAL LEAD COMPANY OF OHIO  
Contract No. AT(30-1)-1156

June 24, 1953

## PLANT ASSISTANCE AND DEVELOPMENT PROJECT PROPOSAL AND AUTHORIZATION

1. Project Number 41-1
2. Title Turret Lathe Machining of SRO Thread
3. Objectives To develop a machining operation, using Morey turret lathes, for fabricating a finished SRO slug.
4. Background Preliminary test work at Alba Craft Inc. indicates an operation on a #1 Morey turret lathe consisting of a small form tool and lead screw to machine a SRO slug complete in one loading operation. The work piece can be supported by using a stationary chuck mounted on the hexagon turret of the lathe. A roughing tool can be mounted ahead of the form tool, with double radius and cut-off tools mounted on the rear cross slide so as to enable one cut across the piece with one subsequent cut to radius and cut-off. Sequence of operations as follows: (See Attached Program).  
  
Methods and Scale Contemplated 2,000 slugs are to be fabricated on a sub-contract operation by Alba Craft Inc., Oxford, Ohio. These will be returned to FMPC for inspection.
6. Estimated Manpower Required (Man Months) A. Technical 1 B. Non-Technical \_\_\_\_\_
7. Starting Date June 1, 1953 Estimated Completion Date August 1, 1953
8. Estimated Total Cost \$5,060.00

|   |                                     |
|---|-------------------------------------|
| (A) Salaries and Wages <u>\$500.00</u>              | (E) Indirect Costs <u>\$2500.00</u> |
| (B) Analytical _____                                | (F) Overhead <u>\$ 400.00</u>       |
| (C) Materials and Operating Supplies <u>\$1000.</u> | (G) Contingency <u>\$ 660.00</u>    |
| (D) Additional Equipment Required _____             |                                     |
9. Estimated Savings to be Effected Possibly \$0.20 per slug
10. Method of Reporting Weekly Status and Summary Technical Reports.
11. Budget Activity No. (14B) 2603

Signed Robert Mui  
 Approved Imlebarck  
 Department Head  
F. L. Cutler  
 Division Director  
 \_\_\_\_\_  
 Plant Manager

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 AEC Branch Chief  
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Disapproved \_\_\_\_\_  
 Reason \_\_\_\_\_

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CLASSIFICATION CANCELLED  
 UNCLASSIFIED  
 DOE/SA-20  
 06-01-93  
D. A. Hughes  
 D. A. Hughes

226-77A-2027  
 Box: 38  
 Focus: Process Development Div.  
 1058 925 NW  
 444 1225 NW  
 FRC #41  
 Classification Cancelled  
 Or Changed To UNCLASS  
 By Authority Of PATTON  
 Date 9/19/84

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**NATIONAL LEAD COMPANY**  
**OF OHIO**  
Box 138, Mt. Healthy Station  
Cincinnati 31, Ohio

May 4, 1953

**SUBJECT** JUSTIFICATION FOR REOPENING THE ALBA CRAFT SHOP DEVELOPMENT  
CONTRACT  
**TO** J. Ciborski  
**FROM** J. Farn  
**REFERENCE**

CLASSIFICATION CANCELLED  
UNCLASSIFIED  
DOE/SA-20  
06-01-93  
B. A. Hughes

A means has been devised to machine a DuPont slug on a turret lathe. This operation consists of using a small form tool and the lead screw on the lathe to machine the thread on the work piece. The work piece can be supported by using a stationary chuck mounted on the hexagon turret of the lathe. A roughing tool can be mounted next to the form tool to remove the major portion of the stock, thus enabling the form tool to machine a light cut. A double radius tool and cut-off tool could be mounted on the back of the cross slide and the radius and cut-off operation could be performed simultaneously on the work piece being machined. The movements needed to perform this operation are listed as follows:

1. Load uranium rod in feed tube of turret lathe with approximately two inches protruding from the collet in the spindle. Close collet.
2. Move cross slide towards spindle against stop and move carriage towards spindle against stop, thus machining the two inches of protruded rod.

**NOTE:** This enables the rough rod to be held by the stationary chuck mounted on the hexagon turret.

3. Move ram on turret towards spindle against stop and lock in place. Open spindle collet and feed the two inches of already machined stock through the stationary chuck mounted on the hexagon turret. Close stationary chuck on machined surface of rod.
4. Close spindle collet.
5. Move carriage away from spindle against stop.
6. Move cross slide towards work piece against stop.
7. Engage feed lever on carriage for .020 inch per revolution, thus roughing the work piece and machining the formed thread.

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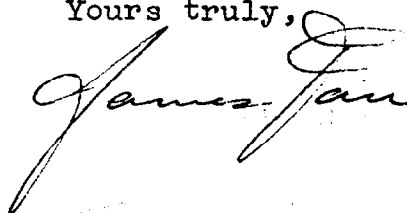
J. Farr to J. Ciborski

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8. Back-off cross slide to stop, thus causing the double radius tool to machine a double radius on the work piece and the cut-off to cut off the previous two inches of machined surfaces.
9. Move cross slide towards spindle in order to remove the double radius and cut-off tools.
10. Open spindle collet and stationary chuck.
11. Unlock ram on hexagon turret and turn spoke wheel to remove stationary chuck away from work piece.
12. Open stationary chuck, remove the machined piece.
13. Turn spoke wheel and move turret ram towards the spindle against turret stop and lock ram.
14. Open spindle collet and feed stock with previously machined work piece still attached through the stationary chuck against the inside stop mounted inside the hexagon turret. Close spindle collet and stationary chuck.
15. Repeat procedures above in order to machine another work piece.

This operation will provide more support for the work during the machining operation than the previous threading operations that were tried on the Acme Gridleys. This operation will also enable us to incorporate the use of the hi-jet system for applying coolant. The form tool used during this operation could be made for an approximate price of \$5.00. Because there is no chatter during the threading operation we should obtain excellent tool life. In order to develop this operation it will be necessary to obtain the use of a turret lathe for approximately one month. Since there is a #4 Morey turret lathe now installed in the Alba Craft Shop in Oxford, Ohio, this would enable us to develop this operation by reopening the development contract with Mr. Albaugh. Once the operation is developed we would then be able to determine production rates. It is possible to incorporate the use of air chucks on the main spindle and the stationary chuck on the hexagon turret which would speed up this operation considerably and reduce the amount of fatigue for the operator.

Yours truly,



JF:bjw

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**CONFIDENTIAL NATIONAL LEAD COMPANY**  
OF OHIO  
**SECURITY INFORMATION** P. BOX 158, MT. HEALTHY STATION  
CINCINNATI 31, OHIO

May 5, 1953

SUBJECT PROPOSED PROGRAM TO DEVELOP A TURRET LATHE OPERATION FOR MACHINING  
THE SRO SLUG  
TO J. M. Ciborski  
FROM J. Farr  
REFERENCE

CLASSIFICATION CANCELLED  
UNCLASSIFIED  
DOE/SA-20  
BY *J. A. Hughes* DATE 06-01-93  
D. A. Hughes

A program will be initiated to develop a machining operation on a turret lathe for fabricating the SRO slug. This operation will consist of rough turning, threading, radiusing and cutting off. A more detailed explanation of the operation is as follows:

1. Load uranium rod in feed tube of turret lathe with approximately two inches protruding from the collet in the spindle. Close collet.
2. Move cross slide towards spindle against stop and move carriage towards spindle against stop, thus machining the two inches of protruded rod.

NOTE: This enables the rough rod to be held by the stationary chuck mounted on the hexagon turret.

3. Move turret on ram towards spindle against stop and lock in place. Open spindle collet and feed the two inches of already machined stock through the stationary chuck mounted on the hexagon turret. Close stationary chuck on machined surface of rod.
4. Close spindle collet.
5. Move carriage away from spindle against stop.
6. Move cross slide towards work piece against stop.
7. Engage feed lever on carriage for .020 inch per revolution thus roughing the work piece and machining the formed thread.
8. Back-off cross slide to stop, thus causing the double radius tool to machine a double radius on the work piece and the cut-off to cut off the previous two inches of machined surface.
9. Move cross slide towards spindle in order to remove the double radius and cut-off tools.
10. Open spindle collet and stationary chuck.

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UNLOCK PROGRAM ON HEXAGON TURRET AND TURN SPOKE WHEEL TO MOVE  
STATIONARY CHUCK AWAY FROM WORK PIECE.  
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12. Open stationary chuck, remove the machined piece.
13. Turn spoke wheel and move turret ram towards the spindle against turret stop and lock ram.
14. Open spindle collet and feed stock with previously machined work piece still attached through the stationary chuck against the inside stop mounted inside the hexagon turret. Close spindle collet and stationary chuck.
15. Repeat procedures above in order to machine another work piece.

The equipment, fixtures and tooling needed to develop this machining operation are listed as follows:

1. One turret lathe equipped with a lead screw that will produce a 50 pitch thread.
2. One form tool and tool holder.
3. One double radius tool and tool holder.
4. One cut-off tool and tool holder.
5. One air chuck (power driven) to fit hexagon turret.
6. One air chuck for main spindle.
7. One stock feed tube assembly.
8. Coolant fixtures.

It has been proposed that this development work be performed at the Alba Craft Shop in Oxford, Ohio because there is a #4 Morey turret lathe available for experimental use, also this will enable us to have the special fixtures, tools and etc. fabricated. Once the operation is developed provisions will be made for machining 2000 uranium slugs at the Alba Craft Shop. This will enable us to determine production rates, tool wear and etc.

The cost of all fixtures and tooling fabricated by the Alba Craft Shop will be covered by a subcontract. Materials needed for these fixtures and tools will be supplied by National Lead. Operators time and consulting time for performing experimental work on the turret lathe and machining the 2000 pieces mentioned above will also be covered by the subcontract.

A breakdown of the approximate costs of this project are as follows:

|                                  | Costs   |
|----------------------------------|---------|
| 1. Length of contract two months | \$2,500 |
| 2. Engineering time (NLO)        | \$1,500 |

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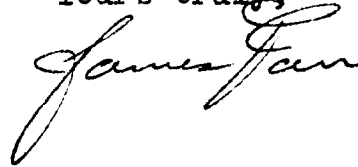
J. Farr to J. M. Ciborski

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|  |                         |
|--|-------------------------|
| 3. Materials for fixtures, tooling, etc. | <u>Costs</u><br>\$1,000 |
| Approximate Total                        | \$5,000                 |

The above costs will include machining time needed to fabricate 2000 uranium work pieces.

Yours truly,



JF/bjw

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