

Appendix A.9

Core Competency Requirements NIMS Certified CNC Operator - Turning

I. CNC OPERATOR – TURNING: BASIC COMPETENCIES
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Core Competency Assessment: CNC Operator – Turning Basic Competencies

Task Code	Task	Date Completed	Supervisor Signature
<i>A</i>	<i>Inspect Materials & Parts</i>		
A1	Measure and Verify Length, Width & Diameter of Raw Materials		
A5	Measure Material Thickness		
A13	Record Quality/Compliance (Inspection) Data		
A15	Measure ID/OD		
A19	Weigh Parts		
A20	Verify & Test Calibration of Inspection Instruments		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B13	Stage Material, Tooling & Fixtures at Work Center		
B14	Inspect Crane/Hoist & Rigging for Safety and Function		
<i>C</i>	<i>Maintain CNC Milling/Turning Equipment</i>		
C1	Check Level & Replenish Coolants/Oils		
C2	Check Coolant Cleanliness & Adjust Concentration		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils		
C4	Check/Empty Tramp Oil Collectors		
C5	Monitor/Adjust Coolant Chillers		
C6	Change Filters		
C7	Empty & Segregate Chips		
C9	Check & Tighten Tooling		
C10	Grease Chucks & Vises		
C11	Replace Probe Batteries		
C12	Check Lockouts & Safeguarding Devices for Function		
C13	Cleanout Inside of Machine		
C15	Clean Tool/Mill Carousel		

Core Competency Assessment: CNC Operator – Turning Basic Competencies
(cont.)

O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>E</i>	<i>Set-up CNC for Turning Operations</i>		
E16	Check, Position & Verify Delivery of Coolant & Fluids for Turning Operations		
E17	Start-up & Home Machine for Turning Operations, Run Warm-up Cycle & Shut Down		
E23	Set-up Chip/Scrap Bins or Containers		
E24	Set-up Packaging or Staging to Finished (Turned) Parts		
<i>G</i>	<i>Operate & Control CNC Turning Processes</i>		
G1	Load, Feed & Unload Turned Work pieces		
G7	Control Chip Flow & Empty Chip Bins or Containers		
G8	Tag Turned Parts for Traceability		
G9	Separate Good Turned Parts From Bad Parts		
G10	Collect Run/Production Data & Information (Turning Operations)		
G11	Benchwork Turned Parts		
G12	Housekeep Work Center/Work Station		
G13	Package/Stage Finished Turned Parts		
G14	Conduct Shift Change Duties & Exchange Information (Turning Operations)		
G15	Shutdown CNC Turning Operations		
<i>H</i>	<i>Perform Benchwork</i>		
H1	Deburr Finished Parts		
H2	Deburr/Clean Raw Materials		
H3	Tap Holes		
H4	Hone Holes		
H6	Wash/Clean/Degrease Parts		
H7	Assemble & Fit Components Onto Part		
H8	Prepare Parts for Secondary Operations		
H9	Lap Parts		
H10	Polish Parts		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Work pieces		
H12	Apply Protective Coatings or Material to Parts		

CNC OPERATOR – TURNING: INTERMEDIATE COMPETENCIES
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>A</i>	<i>Inspect Materials & Parts</i>		
A2	Determine Hardness of Materials		
A3	Identify Materials by Type		
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A6	Measure Part Features, Profiles & Dimensions Optically or Comparatively		
A7	Measure Surface Finish		
A8	Measure Threads		
A9	Measure Bores		
A10	Measure Tapers		
A11	Measure Radius/Radii		
A12	Measure GD&T		
A14	Measure Point-to-Point Distances (e.g., hole-to-hole)		
A16	Measure Temperature of Parts		
A17	Measure Part/Feature Height/Depth		
A18	Measure Angles		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B1	Determine Type of Tooling for Job		
B2	Obtain & Stage Tooling at Work Center		
B3	Determine Workholders		
B4	Identify Raw Material Needs for Job		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B5	Obtain, Review & Verify Part Print and Job Packet		
B7	Determine Appropriateness & Availability of Equipment		
B8	Identify CNC Program to be Downloaded		
B10	Order or Obtain Raw Material & Tooling		
B15	Obtain & Stage Inspection & Gaging Devices		
B17	Check Machine for Pre-Production Maintenance Needs		
B18	Determine Packaging or Staging for Finished Parts		

Core Competency Assessment: CNC Operator – Turning Intermediate
Competencies (cont.)

O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>E</i>	<i>Setup CNC for Turning Operations</i>		
E1	Install/Indicate Chucking Devices		
E2	Install/Indicate Turning Work holding Fixtures		
E3	Bore Soft Jaws		
E4	Install "Live" Tooling		
E5	Pre-Set or Assemble Tooling (Turning)		
E6	Prepare, Adjust & Load Bar Feeder		
E7	Position/Adjust Tail Stock		
E8	Install/Set Tooling (Turning)		
E9	Update Tool Offsets (Turning)		
E10	Update Work Offsets (Turning)		
E11	Load/Download CNC Turning Programs		
E12	Dry Run/Prove-Out CNC Turning Programs		
E14	Set/Verify Hydraulic Pressures		
E15	Load First Article Work piece for Turning Operations		
E18	Turn First Part(s)		
E19	Inspect First Piece part(s)		
E21	Adjust/Edit Tool & Turning Work Offsets		
E22	Establish Cycle Time (Turning)		
E25	Verify (Validate) Part Cosmetics, Quality & Compliance		

Core Competency Assessment: CNC Operator – Turning Intermediate
Competencies (cont.)

O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>F</i>	<i>Operate & Control CNC Milling Processes</i>		
F10	Separate Good Milled Parts from Bad Parts		
F11	Collect Run Data & Information (Milling)		
<i>G</i>	<i>Operate & Control CNC Turning Processes</i>		
G2	Index/Change Tooling (Turning)		
G3	Identify/Replace Worn Tooling (Turning Operations)		
G4	Establish Tool Life Benchmarks (Turning Operations)		
G5	Inspect Turned Parts in Accordance With Inspection/Process Plan		
G6	Monitor, Control & Adjust Turning Processes		
G16	Re-Start CNC for Turning Operations		
<i>H</i>	<i>Perform Benchwork</i>		
H5	Extract Broken Tooling Manually		
<i>J</i>	<i>Troubleshoot Equipment & Compliance/Quality Problems (Selected Examples)</i>		
J2	Find Out Why Tooling Has Broken or Showing Premature Wear		
J3	Find Out Why Holes Are Oversized		
J4	Isolate the Cause Why Concentricity is Out of Tolerance		
J5	Respond to (Isolate the Cause of) Over or Under Sized Threads		
J6	Isolate the Cause of Machine Control Alarms		
J7	Respond to (Isolate the Cause of) Missing or Out-of-Tolerance Features on a Part		
J8	Find Out Why Part Has Excessive Burr		
J9	Determine Why Machine Won't Start or Re-Start		
J10	Find Out Why a Part Left or Moved Out of Work holder or Fixture		

CNC OPERATOR – TURNING: ADVANCED COMPETENCIES
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B12	Determine Sequence of Machining & Secondary Operations		
B16	Calculate Machinability Data		
<i>E</i>	<i>Setup CNC for Turning Operations</i>		
E13	Calibrate Tool & Turret Probes (Optional)		
E20	Adjust/Edit CNC Turning Programs		
<i>J</i>	<i>Troubleshoot & Compliance/Quality Problems (Selected Examples)</i>		
J1	Determine Why Chatter Has Occurred		

Required NIMS Credentials

In order to demonstrate proficiency in all of the competencies listed in this appendix, the apprentice will have completed all of the following NIMS Credentials.

Name of Credential	Date Completed	Supervisor Signature
Measurement, Materials and Safety		
Job Planning, Benchwork and Layout		
CNC Operations - Turning		

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
 CORE COMPETENCY ASSESSMENT FORM
 NIMS CERTIFIED CNC OPERATOR – TURNING
 O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB**

APPRENTICE: _____ EMPLOYEE NUMBER: _____
 SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: CHECK-OFF EACH CORE COMPETENCY AS THE APPRENTICE DEMONSTRATES A LEVEL OF PROFICIENCY THAT IS EQUIVALENT TO THE APPROPRIATE LEVEL

**CNC OPERATOR – TURNING: BASIC WORK PROCESS SCHEDULE
 (PREP CHECKS IN BOLD)**

Task Code	OJL Activity	Date Competency Started	Date Competency Gained
F13/G	Housekeep Work Center/Work Stations		
H6	Wash, Clean & Degrease Parts (Benchwork)		
C13	Cleanout Inside of Machines (Equip. Maintenance)		
D18/E	Set-up Chip (Scrap) Bins & Containers (Milling/Turning)		
G7/F	Control Chip Flow & Empty Chip Bins or Containers (Milling/Turning)		
H2	Deburr/Clean Raw Materials (Benchwork)		
C2	Check Cleanliness of Coolants & Adjust Concentration (Equip. Maintenance)		
C1	Check Levels & Replenish Coolants (Equip. Maintenance)		
C10	Grease Chucks & Vices (Equip. Maintenance)		
A1	Measure Length, Width & Depth of Raw Materials (Inspection)		
A14	Measure Point-to-Point Distances (hole-to-hole, edge-to-hole, etc.)		
A15	Measure ID/OD (Inspection)		
A18	Measure Angles		
A11	Measure radius/radii (Inspection)		
A2	Determine Hardness of Materials (Inspection)		
C12	Verify Safeguarding Devices for Function (Equip. Maintenance)		

CNC OPERATOR – TURNING: INTERMEDIATE LEVEL TRAINING REQUIREMENTS ASSESSMENT
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB
Training Requirements Assessment: CNC Operator – Turning Intermediate
Checklist

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A20 A17 A8	Test & Verify Calibrations of Inspection Instruments Measure Part/Feature Height/Depth (Inspection) Measure Threads		
A10	Measure Tapers (Inspection)		
A9	Measure Bores (Inspection)		
A7	Measure/Check Surface Finish (Inspection)		
A13	Record Quality/Compliance (Inspection) Information & Data		
B15	Obtain & Stage Inspection Instruments and Gaging Devices (Job Planning & Prep)		
B13	Stage Material, Tooling & Fixtures at Work Center (Job Planning & Prep)		
B5	Obtain, Review & Verify Part Print and Job Packet (Job Planning & Prep)		
D6/E	Load/Download Existing CNC Programs (Milling & Turning)		
B14	Inspect Crane/Hoist & Rigging for Safety and Function (Job Planning & Pre		
F15/G	Conduct Shift Change & Exchange Information		

Training Requirements Assessment: CNC Operator – Turning Intermediate
Checklist (cont.)

O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
E17	Startup Machine, Run Warm-up Cycle & Shut Down Machine (Set-up)		
G16	Re-start CNC for Turning Operations		
E1	Install/Indicate Chucking Devices (Set-up)		
E3	Bore Soft Jaw (Turning)		
E8 E21 E4	Install/Setup Tooling (Set-up) Adjust/Edit Tool & Turning Work Offsets Install "Live" Tooling		
E2	Install/Indicate Turning Workholding Fixtures (Set-up)		
E16	Check Position & Verify Delivery of Coolants and Fluids for Turning Operations (Set-up)		
E6	Prepare, Adjust & Load Bar Feeder (Set-up)		
E14	Set/Verify Hydraulic Pressures (Set-up)		
G5	Inspect Turned Parts in Accordance With Inspection/Process Plan		
G6	Monitor, Control & Adjust Turning Processes (Turning Operations)		
G3	Identify/Replace Worn Tooling (Turning Operations)		
G1	Load, Feed & Unload Turned Workpieces (Turning Operations)		
F10/G	Separate/Segregate Good Parts From Bad Parts (Milling & Turning)		
F9/G	Tag Parts for Traceability (Milling & Turning)		
A12 A6	Measure GD&T (Inspection) Measure Part Features, Profiles & Dimensions Optically, Comparatively or Using CMM (Inspection)		

**WORK PROCESS SCHEDULE
CNC OPERATOR – TURNING INTERMEDIATE CHECKLIST
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB
(Prep Checks in Bold)**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A20	Test & Verify Calibrations of Inspection Instruments		
A17 ✓	Measure Part/Feature Height/Depth (Inspection)		
A8	Measure Threads		
A10	Measure Tapers (Inspection)		
A9	Measure Bores (Inspection)		
A7	Measure/Check Surface Finish (Inspection)		
A13	Record Quality/Compliance (Inspection) Information & Data		
B15	Obtain & Stage Inspection Instruments and Gaging Devices (Job Planning & Prep)		
B13	Stage Material, Tooling & Fixtures at Work Center (Job Planning & Prep)		
B5	Obtain, Review & Verify Part Print and Job Packet (Job Planning & Prep)		
D6/E	Load/Download Existing CNC Programs (Milling & Turning)		
B14	Inspect Crane/Hoist & Rigging for Safety and Function (Job Planning & Pre		
F15/G	Conduct Shift Change & Exchange Information		

**WORK PROCESS SCHEDULE
CNC OPERATOR – TURNING
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB
INTERMEDIATE CHECKLIST (CONT.)**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
	<i>Turning Set-up & Operations</i>	n/a	
E17 ✓	Startup Machine, Run Warm-up Cycle & Shut Down Machine (Set-up)		
G16 ✓	Re-start CNC for Turning Operations		
E1	Install/Indicate Chucking Devices (Set-up)		
E3	Bore Soft Jaw (Turning)		
E8	Install/Setup Tooling (Set-up)		
E21 ✓	Adjust/Edit Tool & Turning Work Offsets		
E4	Install “Live” Tooling		
E2	Install/Indicate Turning Workholding Fixtures (Set-up)		
E16	Check Position & Verify Delivery of Coolants and Fluids for Turning Operations (Set-up)		
E6	Prepare, Adjust & Load Bar Feeder (Set-up)		
E14	Set/Verify Hydraulic Pressures (Set-up)		
G5 ✓	Inspect Turned Parts in Accordance With Inspection/Process Plan		
G6	Monitor, Control & Adjust Turning Processes (Turning Operations)		
G3	Identify/Replace Worn Tooling (Turning Operations)		
G1	Load, Feed & Unload Turned Workpieces (Turning Operations)		
F10/G	Separate/Segregate Good Parts From Bad Parts (Milling & Turning)		
F9/G	Tag Parts for Traceability (Milling & Turning)		
A12 A6 ✓	Measure GD&T (Inspection) Measure Part Features, Profiles & Dimensions Optically, Comparatively or Using CMM (Inspection)		

**WORK PROCESS SCHEDULE
CNC OPERATOR – TURNING: ADVANCED LEVEL
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB**

Training Requirements Assessment: CNC Operator - Turning Advanced Checklist

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
E15	Load Workpiece for First Article training Operations (Set-up)		
E12	Dry Run/Prove Out CNC Turning Programs (Set-up)		
E18 E19 E20	Turn First Part/s (Set-up) Inspect First (Article) Piece part/s for Quality and Compliance Adjust/Edit CNC Turning Programs		
E13	Calibrate Tool and Turning Probes (Turning Set-up)		
G4	Establish Tool Life Benchmarks (Turning Operation)		
J2	Find Out Why Tooling has Broken Or Showing Premature Wear		
J1	Determine (Isolate the cause of) why Chatter has Occurred		
J6	Respond to (Isolate the cause of) Machine Control Alarms		
J7	Respond to (Isolate the cause of) Missing or Out-of-Tolerance features on a Part		
J8	Find Out Why a Part has Excessive Burr		

**WORK PROCESS SCHEDULE
CNC OPERATOR – TURNING ADVANCED CHECKLIST
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB
(Prep Checks in Bold)**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
B12	Sequence Machining and Secondary Operations (Job Planning)		
B4	Determine Raw Material Needs for Job (Job Planning)		
E15	Load Work piece for First Article training Operations (Set-up)		
E12	Dry Run/Prove Out CNC Turning Programs (Set-up)		
E18 E19 ✓ E20	Turn First Part/s (Set-up) Inspect First (Article) Piece part/s for Quality and Compliance Adjust/Edit CNC Turning Programs		
E13	Calibrate Tool and Turning Probes (Turning Set-up)		
J2	Find Out Why Tooling has Broken Or Showing Premature Wear		
J1 ✓	Determine (Isolate the cause of) why Chatter has Occurred		
J6	Respond to (Isolate the cause of) Machine Control Alarms		
J7	Respond to (Isolate the cause of) Missing or Out-of-Tolerance features on a Part		
J8	Find Out Why a Part has Excessive Burr		

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
 NIMS CERTIFIED CNC OPERATOR – TURNING
 O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB
 SPECIFIC COMPETENCY ASSESSMENT**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off each Company Specific Competency as the apprentice demonstrates a level of proficiency that is equivalent to a journeyworker level employee.

NIMS CERTIFIED CNC OPERATOR – TURNING COMPANY SPECIFIC COMPETENCIES

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**NIMS COMPETENCY-BASED APPRENTICESHIP
SYSTEM
COMPANY SPECIFIC COMPETENCY RECORD
NIMS CERTIFIED CNC OPERATOR – TURNING
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Provide the *Date the Training Started* for each company specific competency, the *Date the Competency was attained* for the apprentice to attain each company specific competency.

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DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

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DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

RELATED INSTRUCTION RECORD
NIMS CERTIFIED CNC OPERATOR – TURNING
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off each completed Related Instruction Course. Satisfactory completion may be determined by the apprentice's ability to attain the required Core and company specific competencies and corresponding NIMS Credentials.

NIMS CERTIFIED CNC OPERATOR – TURNING RELATED INSTRUCTION COURSES

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____
 SUPERVISOR'S SIGNATURE: _____ DATE: _____

CREDENTIALING RECORD
NIMS CERTIFIED CNC OPERATOR – TURNING
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off the NIMS Credential when the apprentice meets both the hands-on assessment and theoretical examination requirements and is awarded the NIMS Credential.

NIMS CREDENTIALS ALIGNED WITH CORE COMPETENCIES

1.	Measurement, Materials, and Safety	
2.	CNC Operations - Turning	
3.	Job Planning, Benchwork, and Safety	
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NIMS CREDENTIALS ALIGNED WITH COMPANY SPECIFIC COMPETENCIES		
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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

JOB PERFORMANCE ASSESSMENT FORM
NIMS CERTIFIED CNC OPERATOR – TURNING
O*NET-SOC CODE: 51-4.34.00 RAPIDS CODE: 1093CB

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off the Job Performance Criteria as the apprentice meets the terms and conditions contained within the Standards of Apprenticeship, including the Sponsor’s rules and policies, and completes all assignments as the Sponsor may deem necessary to develop a level of competency and proficiency equivalent to a journeyworker Machinist.

NIMS CERTIFIED CNC OPERATOR – TURNING JOB PERFORMANCE ASSESSMENT CRITERIA

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COMMENTS: _____

APPRENTICE’S SIGNATURE: _____
 SUPERVISOR’S SIGNATURE: _____

DATE: _____
 DATE: _____

SAMPLE COMPLETION MEMO

LETTERHEAD OF APPRENTICESHIP SPONSOR

DATE OF LETTER

MEMORANDUM FOR: REGISTRATION AGENCY

ADDRESS OF REGISTRATION AGENCY

FROM: APPRENTICESHIP SPONSOR

SUBJECT: **Request for Certificate of Completion of Apprenticeship**

The following apprentice has satisfactorily completed the requirements of the Standards of Apprenticeship registered with the **REGISTRATION AGENCY** for the occupation of **NIMS Certified CNC Operator- Turning**. See the attached **Application for Certification of Completion of Apprenticeship** for details.

The apprentice has completed all on-the-job learning and related instruction requirements, and attained the required Core Competencies and corresponding NIMS Credentials as defined in the Core Competency Requirements for a **NIMS Certified CNC Operator- Turning**. In addition, the apprentice has demonstrated a level of competency and proficiency equivalent to a journeyworker level employee.

It is recommended that a **Certificate of Completion of Apprenticeship** be awarded to the completing apprentice.

Thank you for your continued cooperation.

SIGNATURE OF
SPONSOR

SPONSOR'S PRINTED NAME

TITLE

Appendix A.10

Core Competency Requirements NIMS Certified CNC Operator- Milling

I. CNC OPERATOR – MILLING: BASIC COMPETENCIES
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB
Core Competency Assessment: CNC Operator – Milling Basic Competencies

Task Code	Task	Date Completed	Supervisor Signature
<i>A</i>	<i>Inspect Materials & Parts</i>		
A1	Measure and Verify Length, Width & Diameter of Raw Materials		
A5	Measure Material Thickness		
A13	Record Quality/Compliance (Inspection) Data		
A15	Measure ID/OD		
A19	Weigh Parts		
A20	Verify & Test Calibration of Inspection Instruments		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B13	Stage Material, Tooling & Fixtures at Work Center		
B14	Inspect Crane/Hoist & Rigging for Safety and Function		
<i>C</i>	<i>Maintain CNC Milling/Turning Equipment</i>		
C1	Check Level & Replenish Coolants/Oils		
C2	Check Coolant Cleanliness & Adjust Concentration		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils		
C4	Check/Empty Tramp Oil Collectors		
C5	Monitor/Adjust Coolant Chillers		
C6	Change Filters		
C7	Empty & Segregate Chips		
C9	Check & Tighten Tooling		
C10	Grease Chucks & Vises		
C11	Replace Probe Batteries		
C12	Check Lockouts & Safeguarding Devices for Function		
C13	Cleanout Inside of Machine		
C15	Clean Tool/Mill Carousel		

Core Competency Assessment: CNC Operator – Milling Basic Competencies

(cont.)

O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>D</i>	<i>Set-up CNC for Milling Operations</i>		
D9	Check/Verify & Position Delivery of Coolants and Fluids		
D10	Start & Home Mill, Run Warm-up Cycle & Shut Down Mill		
D18	Set-up Chip Bins/Containers		
D19	Set-up Packaging/Staging for Finished Parts		
<i>F</i>	<i>Operate & Control CNC Milling Processes</i>		
F1	Load, Feed & Unload Milled		
F3	Replace (or Identify) Worn Tooling (Milling)		
F8	Empty Chip Bins/Containers		
F9	Tag Milled Parts for Traceability		
F12	Perform Benchwork on Milled Parts		
F13	Housekeep Work Center/Work Station		
F14	Package/Stage Finished Milled Parts		
F15	Conduct Shift Change & Exchange Information		
F16	Shutdown CNC Milling Process		
<i>H</i>	<i>Perform Benchwork</i>		
H1	Deburr Finished Parts		
H2	Deburr/Clean Raw Materials		
H3	Tap Holes		
H4	Hone Holes		
H6	Wash/Clean/Degrease Parts		
H7	Assemble & Fit Components Onto Part		
H8	Prepare Parts for Secondary Operations		
H9	Lap Parts		
H10	Polish Parts		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Work pieces		
H12	Apply Protective Coatings or Material to Parts		

CNC OPERATOR – MILLING: INTERMEDIATE COMPETENCIES
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>A</i>	<i>Inspect Materials & Parts</i>		
A2	Determine Hardness of Materials		
A3	Identify Materials by Type		
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A6	Measure Part Features, Profiles & Dimensions Optically or Comparatively		
A7	Measure Surface Finish		
A8	Measure Threads		
A9	Measure Bores		
A10	Measure Tapers		
A11	Measure Radius/Radii		
A12	Measure GD&T		
A14	Measure Point-to-Point Distances (e.g., hole-to-hole)		
A16	Measure Temperature of Parts		
A17	Measure Part/Feature Height/Depth		
A18	Measure Angles		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B1	Determine Type of Tooling for Job		
B2	Obtain & Stage Tooling at Work Center		
B3	Determine Workholders		
B4	Identify Raw Material Needs for Job		
B5	Obtain, Review & Verify Part Print and Job Packet		
B7	Determine Appropriateness & Availability of Equipment		
B8	Identify CNC Program to be Downloaded		
B10	Order or Obtain Raw Material & Tooling		
B15	Obtain & Stage Inspection & Gaging Devices		
B17	Check Machine for Pre-Production Maintenance Needs		
B18	Determine Packaging or Staging for Finished Parts		

Core Competency Assessment: CNC Operator – Milling Intermediate
Competencies (cont.)

O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>C</i>	<i>Maintain CNC Milling/Turning Equipment</i>		
C8	Check Draw Bar Force		
C14	Clean Machine Tool Tapers		
<i>D</i>	<i>Set-up CNC for Milling Operations</i>		
D1	Install & Indicate Workholding Fixtures		
D2	Pre-Set or Assemble Tooling		
D3	Install/Set Tooling		
D4	Update Tool Offsets		
D5	Update Work Offsets		
D6	Load/Download CNC Programs		
D7	Dry Run/Prove-Out CNC Programs		
D8	Load First Article Work piece to be Milled		
D13	Run First Piece(s)		
D14	Inspect First Piece part(s)		
D16	Adjust/Edit Tool Offsets & Work Offsets		
D17	Establish Cycle Time		
D20	Verify Milled Parts Quality and Compliance (inspect parts)		
<i>F</i>	<i>Operate & Control CNC Milling Processes</i>		
F2	Index/Change Tooling (Milling)		
F4	Establish Tool Life Benchmarks (Milling)		
F5	Inspect Milled Parts for Compliance While Adhering to Frequency of Inspections		
F6	Monitor, Adjust & Control Milling Process		
F7	Control Chip Flow		

Core Competency Assessment: CNC Operator – Milling Intermediate
Competencies (cont.)

O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>F</i>	<i>Operate & Control CNC Milling Processes</i>		
F10	Separate Good Milled Parts from Bad Parts		
F11	Collect Run Data & Information (Milling)		
F17	Re-Start CNC Milling Process		
<i>H</i>	<i>Perform Benchwork</i>		
H5	Extract Broken Tooling Manually		
<i>J</i>	<i>Troubleshoot Equipment & Compliance/Quality Problems (Selected Examples)</i>		
J2	Find Out Why Tooling Has Broken or Showing Premature Wear		
J3	Find Out Why Holes Are Oversized		
J4	Isolate the Cause Why Concentricity is Out of Tolerance		
J5	Respond to (Isolate the Cause of) Over or Under Sized Threads		
J6	Isolate the Cause of Machine Control Alarms		
J7	Respond to (Isolate the Cause of) Missing or Out-of-Tolerance Features on a Part		
J8	Find Out Why Part Has Excessive Burr		
J9	Determine Why Machine Won't Start or Re-Start		
J10	Find Out Why a Part Left or Moved Out of Workholder or Fixture		

CNC OPERATOR – MILLING: ADVANCED COMPETENCIES
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B12	Determine Sequence of Machining & Secondary Operations		
B16	Calculate Machinability Data		
<i>D</i>	<i>Set-up CNC for Milling Operations</i>		
D11	Calibrate Spindle & Tool Probes		
D12	Program Independent Rotary Head/Indexer		
D15	Adjust/Edit Milling CNC Programs		
<i>J</i>	<i>Troubleshoot & Compliance/Quality Problems (Selected Examples)</i>		
J1	Determine Why Chatter Has Occurred		

Required NIMS Credentials

In order to demonstrate proficiency in all of the competencies listed in this appendix, the apprentice will have completed all of the following NIMS Credentials.

Name of Credential	Date Completed	Supervisor Signature
Measurement, Materials and Safety		
Job Planning, Benchwork and Layout		
CNC Operations - Milling		

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
NIMS CERTIFIED CNC OPERATOR – MILLING
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB
CORE COMPETENCY ASSESSMENT FORM**

APPRENTICE: _____
SUPERVISOR: _____

EMPLOYEE NUMBER: _____
DEPARTMENT: _____

INSTRUCTIONS: CHECK-OFF EACH CORE COMPETENCY AS THE APPRENTICE DEMONSTRATES A LEVEL OF PROFICIENCY THAT IS EQUIVALENT TO THE APPROPRIATE LEVEL

**CNC OPERATOR – MILLING: BASIC WORK PROCESS SCHEDULE
(PREP CHECKS IN BOLD)**

Task Code	OJL Activity	Date Competency Started	Date Competency Gained
F13/G	Housekeep Work Center/Work Stations		
H6	Wash, Clean & Degrease Parts (Benchwork)		
C13	Cleanout Inside of Machines (Equip. Maintenance)		
D18/E	Setup Chip (Scrap) Bins & Containers (Milling/Turning)		
G7/F	Control Chip Flow & Empty Chip Bins or Containers (Milling/Turning)		
H2	Deburr/Clean Raw Materials (Benchwork)		
C2	Check Cleanliness of Coolants & Adjust Concentration (Equip. Maintenance)		
C1	Check Levels & Replenish Coolants (Equip. Maintenance)		
C10	Grease Chucks & Vices (Equip. Maintenance)		
A1	Measure Length, Width & Depth of Raw Materials (Inspection)		
A14	Measure Point-to-Point Distances (hole-		
A15	to-hole, edge-to-hole, etc.)		
A18	Measure ID/OD (Inspection)		
	Measure Angles		
A11	Measure radius/radii (Inspection)		
A2	Determine Hardness of Materials (Inspection)		
C12	Verify Safeguarding Devices for Function		
	(Equip. Maintenance)		
D19	Set-up Packaging/Staging for Finished Parts (Set-up)		

CNC OPERATOR – MILLING: INTERMEDIATE LEVEL TRAINING REQUIREMENTS ASSESSMENT**O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB****Training Requirements Assessment: CNC Operator – Milling Intermediate Checklist**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A20 A17 A8	Test & Verify Calibrations of Inspection Instruments Measure Part/Feature Height/Depth (Inspection) Measure Threads		
A10	Measure Tapers (Inspection)		
A9	Measure Bores (Inspection)		
A7	Measure/Check Surface Finish (Inspection)		
A13	Record Quality/Compliance (Inspection) Information & Data		
B15	Obtain & Stage Inspection Instruments and Gaging Devices (Job Planning & Prep		
B13	Stage Material, Tooling & Fixtures at Work Center (Job Planning & Prep)		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils (Equip. Maintenance		
B5	Obtain, Review & Verify Part Print and Job Packet (Job Planning & Prep)		
D6/E	Load/Download Existing CNC Programs (Milling & Turning)		
B14	Inspect Crane/Hoist & Rigging for Safety and Function (Job Planning & Pre		
C9	Check & Tighten Tooling (Equip. Maintenance)		
F15/G	Conduct Shift Change & Exchange Information		

**Training Requirements Assessment: CNC Operator – Milling Intermediate
Competencies (cont.)**

O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
E17	Startup Machine, Run Warm-up Cycle & Shut Down Machine (Set-up)		
	<i>Milling Setup & Operations</i>		
D10	Start Mill, Run Warm-up Cycle & Shut Down Machine (Set-up)		
F17	Re-start CNC Milling Operations (Milling Operations)		
D1	Install & indicate Work holding Fixtures (Set-up)		
D3 D16	Install/Set Tooling (Set-up) Adjust/Edit Tool Offsets & Work Offsets		
F1	Load, Feed & Unload Milled Work pieces (Milling Operations)		
F3	Replace or Identify Worn Tooling (Milling Operations)		
F5	Inspect Milled Parts for Compliance While Adhering to Frequency of Inspections (Milling Operations)		

**Training Requirements Assessment: CNC Operator – Milling Intermediate
Competencies (cont.)**

O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
F6	Monitor, Adjust & Control Milling Processes (Milling Operations)		
H8	Prepare Parts for Secondary Operations (Benchwork)		
H1	Deburr Finished Parts (Benchwork)		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Work pieces (Benchwork)		
F10/G	Separate/Segregate Good Parts From Bad Parts (Milling & Turning)		
F9/G	Tag Parts for Traceability (Milling & Turning)		
A12 A6	Measure GD&T (Inspection) Measure Part Features, Profiles & Dimensions Optically, Comparatively or Using CMM (Inspection)		

WORK PROCESS SCHEDULE
CNC OPERATOR – MILLING INTERMEDIATE COMPETENCIES
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB
(Prep Checks in Bold)

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A20 A17 ✓ A8	Test & Verify Calibrations of Inspection Instruments Measure Part/Feature Height/Depth (Inspection) Measure Threads		
A10	Measure Tapers (Inspection)		
A9	Measure Bores (Inspection)		
A7	Measure/Check Surface Finish (Inspection)		
A13	Record Quality/Compliance (Inspection) Information & Data		
B15	Obtain & Stage Inspection Instruments and Gaging Devices (Job Planning & Prep)		
B13	Stage Material, Tooling & Fixtures at Work Center (Job Planning & Prep)		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils (Equip. Maintenance)		
B5	Obtain, Review & Verify Part Print and Job Packet (Job Planning & Prep)		
D6/E	Load/Download Existing CNC Programs (Milling & Turning)		
B14	Inspect Crane/Hoist & Rigging for Safety and Function (Job Planning & Pre		
C9	Check & Tighten Tooling (Equip. Maintenance)		
F15/G	Conduct Shift Change & Exchange Information		

WORK PROCESS SCHEDULE
CNC Operator – Milling Intermediate Competencies (cont.)
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
	<i>Milling Set-up & Operations</i>	n/a	
D10 ✓	Start Mill, Run Warm-up Cycle & Shut Down Machine (Set-up)		
F17 ✓	Re-start CNC Milling Operations (Milling Operations)		
D1 ✓	Install & indicate Work holding Fixtures (Set-up)		
D3 D16 ✓	Install/Set Tooling (Set-up) Adjust/Edit Tool Offsets & Work Offsets		
F1	Load, Feed & Unload Milled Work pieces (Milling Operations)		
F3	Replace or Identify Worn Tooling (Milling Operations)		
F5	Inspect Milled Parts for Compliance While Adhering to Frequency of Inspections (Milling Operations)		
F6	Monitor, Adjust & Control Milling Processes (Milling Operations)		
H8	Prepare Parts for Secondary Operations (Benchwork)		
H1 ✓	Deburr Finished Parts (Benchwork)		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Work pieces (Benchwork)		
F10/G	Separate/Segregate Good Parts From Bad Parts (Milling & Turning)		
F9/G	Tag Parts for Traceability (Milling & Turning)		
A12 A6 ✓	Measure GD&T (Inspection) Measure Part Features, Profiles & Dimensions Optically, Comparatively or Using CMM (Inspection)		

CNC OPERATOR – MILLING: ADVANCED LEVEL WORK PROCESS SCHEDULE
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB
Training Requirements Assessment: CNC Operator Advanced Competencies

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
D8	Load Work piece for First Article Milling Operations (Set-up)		
D7	Dry-Run/Prove Out CNC Milling Programs (Set-up)		
D13 D14 D15	Mill First Part/s (Set-up) Inspect First (Articles) Piece parts for Quality and Compliance Adjust/Edit CNC Milling Programs (Set-up)		
D11	Calibrate Spindle & Tool Probes (Milling Set-up)		
F4	Establish Tool Life Benchmarks (Milling Operations)		
J2	Find Out Why Tooling has Broken Or Showing Premature Wear		
J1	Determine (Isolate the cause of) why Chatter has Occurred		
J6	Respond to (Isolate the cause of) Machine Control Alarms		
J7	Respond to (Isolate the cause of) Missing or Out-of-Tolerance features on a Part		
J8	Find Out Why a Part has Excessive Burr		

WORK PROCESS SCHEDULE
CNC Operator – Milling: Advanced Competencies
O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB
(Prep Checks in Bold)

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
B12	Sequence Machining and Secondary Operations (Job Planning)		
B4	Determine Raw Material Needs for Job (Job Planning)		
G4	Establish Tool Life Benchmarks (Turning Operation)		
D8	Load Work piece for First Article Milling Operations (Set-up)		
D7	Dry-Run/Prove Out CNC Milling Programs (Setup)		
D13 D14 ✓ D15	Mill First Part/s (Set-up) Inspect First (Articles) Pieceparts for Quality and Compliance Adjust/Edit CNC Milling Programs (Set-up)		
D11	Calibrate Spindle & Tool Probes (Milling Setup)		
F4	Establish Tool Life Benchmarks (Milling Operations)		
J2	Find Out Why Tooling has Broken Or Showing Premature Wear		
J1 ✓	Determine (Isolate the cause of) why Chatter has Occurred		
J6	Respond to (Isolate the cause of) Machine Control Alarms		
J7	Respond to (Isolate the cause of) Missing or Out-of-Tolerance features on a Part		
J8	Find Out Why a Part has Excessive Burr		

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
 SPECIFIC COMPETENCY ASSESSMENT
 NIMS CERTIFIED CNC OPERATOR – MILLING
 O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off each Company Specific Competency as the apprentice demonstrates a level of proficiency that is equivalent to a journeyworker level employee.

NIMS CERTIFIED CNC OPERATOR – MILLING COMPANY SPECIFIC COMPETENCIES

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
 NIMS CERTIFIED CNC OPERATOR – MILLING
 O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB
 COMPANY SPECIFIC COMPETENCY RECORD**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Provide the *Date the Training Started* for each company specific competency, the *Date the Competency was attained* for the apprentice to attain each company specific competency.

1.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
2.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
3.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
4.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
5.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
6.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
7.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
8.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
9.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
10.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
11.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED
12.	_____ DATE TRAINING STARTED	_____ DATE COMPETENCY ATTAINED

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DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

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DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

RELATED INSTRUCTION RECORD

O*NET-SOC CODE: 51-4035.00 RAPIDS CODE: 1097CB

NIMS CERTIFIED CNC OPERATOR – MILLING

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off each completed Related Instruction Course. Satisfactory completion may be determined by the apprentice's ability to attain the required Core and company specific competencies and corresponding NIMS Credentials.

NIMS CERTIFIED CNC OPERATOR – MILLING RELATED INSTRUCTION COURSES

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**NIMS CERTIFIED CNC OPERATOR – MILLING
CREDENTIALING RECORD**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off the NIMS Credential when the apprentice meets both the hands-on assessment and theoretical examination requirements and is awarded the NIMS Credential.

NIMS CREDENTIALS ALIGNED WITH CORE COMPETENCIES

1.	Measurement, Materials, and Safety	
2.	CNC Operations - Milling	
3.	Job Planning, Benchwork, and Safety	
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	NIMS CREDENTIALS ALIGNED WITH COMPANY SPECIFIC COMPETENCIES	
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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**JOB PERFORMANCE ASSESSMENT FORM
NIMS CERTIFIED CNC OPERATOR – MILLING**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off the Job Performance Criteria as the apprentice meets the terms and conditions contained within the Standards of Apprenticeship, including the Sponsor's rules and policies, and completes all assignments as the Sponsor may deem necessary to develop a level of competency and proficiency equivalent to a journeyworker Machinist.

NIMS CERTIFIED CNC OPERATOR – MILLING JOB PERFORMANCE ASSESSMENT CRITERIA

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**SAMPLE COMPLETION
MEMO**

LETTERHEAD OF APPRENTICESHIP SPONSOR

DATE OF LETTER

MEMORANDUM FOR: REGISTRATION AGENCY

ADDRESS OF REGISTRATION AGENCY

FROM: APPRENTICESHIP SPONSOR

SUBJECT: Request for Certificate of Completion of Apprenticeship

The following apprentice has satisfactorily completed the requirements of the Standards of Apprenticeship registered with the **REGISTRATION AGENCY** for the occupation of **NIMS Certified CNC Operator- Milling**. See the attached **Application for Certification of Completion of Apprenticeship** for details.

The apprentice has completed all on-the-job learning and related instruction requirements, and attained the required Core Competencies and corresponding NIMS Credentials as defined in the Core Competency Requirements for a **NIMS Certified CNC Operator- Milling**. In addition, the apprentice has demonstrated a level of competency and proficiency equivalent to a journeyworker level employee.

It is recommended that a **Certificate of Completion of Apprenticeship** be awarded to the completing apprentice.

Thank you for your continued cooperation.

SIGNATURE OF
SPONSOR

SPONSOR'S PRINTED NAME

TITLE

Appendix A.11

Core Competency Requirements NIMS Certified CNC Operator- Milling and Turning

I. CNC OPERATOR – MILLING AND TURNING: BASIC COMPETENCIES
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB
Core Competency Assessment: CNC Operator – Milling and Turning Basic Competencies

Task Code	Task	Date Completed	Supervisor Signature
<i>A</i>	<i>Inspect Materials & Parts</i>		
A1	Measure and Verify Length, Width & Diameter of Raw Materials		
A5	Measure Material Thickness		
A13	Record Quality/Compliance (Inspection) Data		
A15	Measure ID/OD		
A19	Weigh Parts		
A20	Verify & Test Calibration of Inspection Instruments		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B13	Stage Material, Tooling & Fixtures at Work Center		
B14	Inspect Crane/Hoist & Rigging for Safety and Function		
<i>C</i>	<i>Maintain CNC Milling/Turning Equipment</i>		
C1	Check Level & Replenish Coolants/Oils		
C2	Check Coolant Cleanliness & Adjust Concentration		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils		
C4	Check/Empty Tramp Oil Collectors		
C5	Monitor/Adjust Coolant Chillers		
C6	Change Filters		
C7	Empty & Segregate Chips		
C9	Check & Tighten Tooling		
C10	Grease Chucks & Vises		
C11	Replace Probe Batteries		
C12	Check Lockouts & Safeguarding Devices for Function		
C13	Cleanout Inside of Machine		
C15	Clean Tool/Mill Carousel		

Core Competency Assessment: CNC Operator – Milling and Turning Basic Competencies (cont.)

O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>D</i>	<i>Set-up CNC for Milling Operations</i>		
D9	Check/Verify & Position Delivery of Coolants and Fluids		
D10	Start & Home Mill, Run Warm-up Cycle & Shut Down Mill		
D18	Set-up Chip Bins/Containers		
D19	Set-up Packaging/Staging for Finished Parts		
<i>E</i>	<i>Set-up CNC for Turning Operations</i>		
E16	Check, Position & Verify Delivery of Coolant & Fluids for Turning Operations		
E17	Start-up & Home Machine for Turning Operations, Run Warm-up Cycle & Shut Down		
E23	Set-up Chip/Scrap Bins or Containers		
E24	Set-up Packaging or Staging to Finished (Turned) Parts		
<i>F</i>	<i>Operate & Control CNC Milling Processes</i>		
F1	Load, Feed & Unload Milled Work pieces		
F3	Replace (or Identify) Worn Tooling (Milling)		
F8	Empty Chip Bins/Containers		
F9	Tag Milled Parts for Traceability		
F12	Perform Benchwork on Milled Parts		
F13	Housekeep Work Center/Work Station		
F14	Package/Stage Finished Milled Parts		
F15	Conduct Shift Change & Exchange Information		
F16	Shutdown CNC Milling Process		

**Core Competency Assessment: CNC Operator – Milling and Turning Basic
Competencies (cont.)**

O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>G</i>	<i>Operate & Control CNC Turning Processes</i>		
G1	Load, Feed & Unload Turned Work pieces		
G7	Control Chip Flow & Empty Chip Bins or Containers		
G8	Tag Turned Parts for Traceability		
G9	Separate Good Turned Parts From Bad Parts		
G10	Collect Run/Production Data & Information (Turning Operations)		
G11	Benchwork Turned Parts		
G12	Housekeep Work Center/Work Station		
G13	Package/Stage Finished Turned Parts		
G14	Conduct Shift Change Duties & Exchange Information (Turning Operations)		
G15	Shutdown CNC Turning Operations		
<i>H</i>	<i>Perform Benchwork</i>		
H1	Deburr Finished Parts		
H2	Deburr/Clean Raw Materials		
H3	Tap Holes		
H4	Hone Holes		
H6	Wash/Clean/Degrease Parts		
H7	Assemble & Fit Components Onto Part		
H8	Prepare Parts for Secondary Operations		
H9	Lap Parts		
H10	Polish Parts		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Work pieces		
H12	Apply Protective Coatings or Material to Parts		

CNC OPERATOR – MILLING AND TURNING: INTERMEDIATE COMPETENCIES
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>A</i>	<i>Inspect Materials & Parts</i>		
A2	Determine Hardness of Materials		
A3	Identify Materials by Type		
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A6	Measure Part Features, Profiles & Dimensions Optically or Comparatively		
A7	Measure Surface Finish		
A8	Measure Threads		
A9	Measure Bores		
A10	Measure Tapers		
A11	Measure Radius/Radii		
A12	Measure GD&T		
A14	Measure Point-to-Point Distances (e.g., hole-to-hole)		
A16	Measure Temperature of Parts		
A17	Measure Part/Feature Height/Depth		
A18	Measure Angles		
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B1	Determine Type of Tooling for Job		
B2	Obtain & Stage Tooling at Work Center		
B3	Determine Workholders		
B4	Identify Raw Material Needs for Job		
B5	Obtain, Review & Verify Part Print and Job Packet		
B7	Determine Appropriateness & Availability of Equipment		
B8	Identify CNC Program to be Downloaded		
B10	Order or Obtain Raw Material & Tooling		
B15	Obtain & Stage Inspection & Gaging Devices		
B17	Check Machine for Pre-Production Maintenance Needs		
B18	Determine Packaging or Staging for Finished Parts		

Core Competency Assessment: CNC Operator – Milling and Turning
Intermediate Competencies (cont.)

O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>C</i>	<i>Maintain CNC Milling/Turning Equipment</i>		
C8	Check Draw Bar Force		
C14	Clean Machine Tool Tapers		
<i>D</i>	<i>Set-up CNC for Milling Operations</i>		
D1	Install & Indicate Workholding Fixtures		
D2	Pre-Set or Assemble Tooling		
D3	Install/Set Tooling		
D4	Update Tool Offsets		
D5	Update Work Offsets		
D6	Load/Download CNC Programs		
D7	Dry Run/Prove-Out CNC Programs		
D8	Load First Article Work piece to be Milled		
D13	Run First Piece(s)		
D14	Inspect First Piece part(s)		
D16	Adjust/Edit Tool Offsets & Work Offsets		
D17	Establish Cycle Time		
D20	Verify Milled Parts Quality and Compliance (inspect parts)		
<i>E</i>	<i>Set-up CNC for Turning Operations</i>		
E1	Install/Indicate Chucking Devices		
E2	Install/Indicate Turning Workholding Fixtures		
E3	Bore Soft Jaws		
E4	Install "Live" Tooling		
E5	Pre-Set or Assemble Tooling (Turning)		
E6	Prepare, Adjust & Load Bar Feeder		
E7	Position/Adjust Tail Stock		
E8	Install/Set Tooling (Turning)		
E9	Update Tool Offsets (Turning)		
E10	Update Work Offsets (Turning)		
E11	Load/Download CNC Turning Programs		
E12	Dry Run/Prove-Out CNC Turning Programs		
E14	Set/Verify Hydraulic Pressures		
E15	Load First Article Work piece for Turning Operations		
E18	Turn First Part(s)		
E19	Inspect First Piece part(s)		
E21	Adjust/Edit Tool & Turning Work Offsets		
E22	Establish Cycle Time (Turning)		
E25	Verify (Validate) Part Cosmetics, Quality & Compliance		

Core Competency Assessment: CNC Operator – Milling and Turning
Intermediate Competencies (cont.)

O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>F</i>	<i>Operate & Control CNC Milling Processes</i>		
F2	Index/Change Tooling (Milling)		
F4	Establish Tool Life Benchmarks (Milling)		
F5	Inspect Milled Parts for Compliance While Adhering to Frequency of Inspections		
F6	Monitor, Adjust & Control Milling Process		
F7	Control Chip Flow		
F10	Separate Good Milled Parts from Bad Parts		
F11	Collect Run Data & Information (Milling)		
F17	Re-Start CNC Milling Process		
<i>G</i>	<i>Operate & Control CNC Turning Processes</i>		
G2	Index/Change Tooling (Turning)		
G3	Identify/Replace Worn Tooling (Turning Operations)		
G4	Establish Tool Life Benchmarks (Turning Operations)		
G5	Inspect Turned Parts in Accordance With Inspection/Process Plan		
G6	Monitor, Control & Adjust Turning Processes		
G16	Re-Start CNC for Turning Operations		
<i>H</i>	<i>Perform Benchwork</i>		
H5	Extract Broken Tooling Manually		
<i>J</i>	<i>Troubleshoot Equipment & Compliance/Quality Problems (Selected Examples)</i>		
J2	Find Out Why Tooling Has Broken or Showing Premature Wear		
J3	Find Out Why Holes Are Oversized		
J4	Isolate the Cause Why Concentricity is Out of Tolerance		
J5	Respond to (Isolate the Cause of) Over or Under Sized Threads		
J6	Isolate the Cause of Machine Control Alarms		
J7	Respond to (Isolate the Cause of) Missing or Out-of-Tolerance Features on a Part		
J8	Find Out Why Part Has Excessive Burr		
J9	Determine Why Machine Won't Start or Re-Start		
J10	Find Out Why a Part Left or Moved Out of Workholder or Fixture		

CNC OPERATOR – MILLING AND TURNING: ADVANCED COMPETENCIES
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Duty Area	Task	Date Completed	Supervisor Signature
<i>B</i>	<i>Plan Job & Prepare for Production</i>		
B12	Determine Sequence of Machining & Secondary Operations		
B16	Calculate Machinability Data		
<i>D</i>	<i>Set-up CNC for Milling Operations</i>		
D11	Calibrate Spindle & Tool Probes		
D12	Program Independent Rotary Head/Indexer		
D15	Adjust/Edit Milling CNC Programs		
<i>E</i>	<i>Set-up CNC for Turning Operations</i>		
E13	Calibrate Tool & Turret Probes (Optional)		
E20	Adjust/Edit CNC Turning Programs		
<i>J</i>	<i>Troubleshoot & Compliance/Quality Problems (Selected Examples)</i>		
J1	Determine Why Chatter Has Occurred		

Required NIMS Credentials

In order to demonstrate proficiency in all of the competencies listed in this appendix, the apprentice will have completed all of the following NIMS Credentials.

Name of Credential	Date Completed	Supervisor Signature
Measurement, Materials and Safety		
Job Planning, Benchwork and Layout		
CNC Operations - Milling		
CNC Operations - Turning		

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
 CORE COMPETENCY ASSESSMENT FORM
 O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB
 NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING**

APPRENTICE: _____ EMPLOYEE NUMBER: _____
 SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: CHECK-OFF EACH CORE COMPETENCY AS THE APPRENTICE DEMONSTRATES A LEVEL OF PROFICIENCY THAT IS EQUIVALENT TO THE APPROPRIATE LEVEL

**CNC OPERATOR – MILLING AND TURNING: BASIC WORK PROCESS SCHEDULE
 (PREP CHECKS IN BOLD)**

Task Code	OJL Activity	Date Competency Started	Date Competency Gained
F13/G	Housekeep Work Center/Work Stations		
H6	Wash, Clean & Degrease Parts (Benchwork)		
C13	Cleanout Inside of Machines (Equip. Maintenance)		
D18/E	Setup Chip (Scrap) Bins & Containers (Milling/Turning)		
G7/F	Control Chip Flow & Empty Chip Bins or Containers (Milling/Turning)		
H2	Deburr/Clean Raw Materials (Benchwork)		
C2	Check Cleanliness of Coolants & Adjust Concentration (Equip. Maintenance)		
C1	Check Levels & Replenish Coolants (Equip. Maintenance)		
C10	Grease Chucks & Vices (Equip. Maintenance)		
A1	Measure Length, Width & Depth of Raw Materials (Inspection)		
A14 A15 A18	Measure Point-to-Point Distances (hole-to-hole, edge-to-hole, etc.) Measure ID/OD (Inspection) Measure Angles		
A11	Measure radius/radii (Inspection)		
A2	Determine Hardness of Materials (Inspection)		
C12	Verify Safeguarding Devices for Function (Equip. Maintenance)		
D19	Setup Packaging/Staging for Finished Parts (Set-up)		

**CNC OPERATOR – MILLING AND TURNING: INTERMEDIATE LEVEL TRAINING
 REQUIREMENTS ASSESSMENT
 O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB
 Training Requirements Assessment: CNC Operator – Milling and Turning
 Intermediate Competencies**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A20 A17 A8	Test & Verify Calibrations of Inspection Instruments Measure Part/Feature Height/Depth (Inspection) Measure Threads		
A10	Measure Tapers (Inspection)		
A9	Measure Bores (Inspection)		
A7	Measure/Check Surface Finish (Inspection)		
A13	Record Quality/Compliance (Inspection) Information & Data		
B15	Obtain & Stage Inspection Instruments and Gaging Devices (Job Planning & Prep)		
B13	Stage Material, Tooling & Fixtures at Work Center (Job Planning & Prep)		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils (Equip. Maintenance)		
B5	Obtain, Review & Verify Part Print and Job Packet (Job Planning & Prep)		
D6/E	Load/Download Existing CNC Programs (Milling & Turning)		
B14	Inspect Crane/Hoist & Rigging for Safety and Function (Job Planning & Pre		
C9	Check & Tighten Tooling (Equip. Maintenance)		
F15/G	Conduct Shift Change & Exchange Information		

**Training Requirements Assessment: CNC Operator – Milling and Turning
Intermediate Competencies (cont.)
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
E17	Startup Machine, Run Warm-up Cycle & Shut Down Machine (Set-up)		
G16	Re-start CNC for Turning Operations		
E1	Install/Indicate Chucking Devices (Set-up)		
E3	Bore Soft Jaw (Turning)		
E8	Install/Set-up Tooling (Set-up)		
E21	Adjust/Edit Tool & Turning Work Offsets		
E4	Install "Live" Tooling		
E2	Install/Indicate Turning Work holding Fixtures (Set-up)		
E16	Check Position & Verify Delivery of Coolants and Fluids for Turning Operations (Set-up)		
E6	Prepare, Adjust & Load Bar Feeder (Set-up)		
E14	Set/Verify Hydraulic Pressures (Set-up)		
G5	Inspect Turned Parts in Accordance With Inspection/Process Plan		
G6	Monitor, Control & Adjust Turning Processes (Turning Operations)		
G3	Identify/Replace Worn Tooling (Turning Operations)		
G1	Load, Feed & Unload Turned Work pieces (Turning Operations)		
	<i>Milling Set-up & Operations</i>		
D10	Start Mill, Run Warm-up Cycle & Shut Down Machine (Set-up)		
F17	Re-start CNC Milling Operations (Milling Operations)		
D1	Install & indicate Work holding Fixtures (Set-up)		
D3	Install/Set Tooling (Set-up)		
D16	Adjust/Edit Tool Offsets & Work Offsets		
F1	Load, Feed & Unload Milled Work pieces (Milling Operations)		
F3	Replace or Identify Worn Tooling (Milling Operations)		
F5	Inspect Milled Parts for Compliance While Adhering to Frequency of Inspections (Milling Operations)		

**Training Requirements Assessment: CNC Operator – Milling and Turning
Intermediate Competencies (cont.)
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB**

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
F6	Monitor, Adjust & Control Milling Processes (Milling Operations)		
H8	Prepare Parts for Secondary Operations (Benchwork)		
H1	Deburr Finished Parts (Benchwork)		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Workpieces (Benchwork)		
F10/G	Separate/Segregate Good Parts From Bad Parts (Milling & Turning)		
F9/G	Tag Parts for Traceability (Milling & Turning)		
A12 A6	Measure GD&T (Inspection) Measure Part Features, Profiles & Dimensions Optically, Comparatively or Using CMM (Inspection)		

WORK PROCESS SCHEDULE
CNC OPERATOR – MILLING AND TURNING INTERMEDIATE COMPETENCIES
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB
(Prep Checks in Bold)

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
A4	Review Part Prints & Identify Critical Dimensions (match part to print)		
A20 A17 ✓ A8	Test & Verify Calibrations of Inspection Instruments Measure Part/Feature Height/Depth (Inspection) Measure Threads		
A10	Measure Tapers (Inspection)		
A9	Measure Bores (Inspection)		
A7	Measure/Check Surface Finish (Inspection)		
A13	Record Quality/Compliance (Inspection) Information & Data		
B15	Obtain & Stage Inspection Instruments and Gaging Devices (Job Planning & Prep)		
B13	Stage Material, Tooling & Fixtures at Work Center (Job Planning & Prep)		
C3	Check & Replenish Hydraulic/Way-Lube Fluids & Spindle Oils (Equip. Maintenance)		
B5	Obtain, Review & Verify Part Print and Job Packet (Job Planning & Prep)		
D6/E	Load/Download Existing CNC Programs (Milling & Turning)		
B14	Inspect Crane/Hoist & Rigging for Safety and Function (Job Planning & Pre)		
C9	Check & Tighten Tooling (Equip. Maintenance)		
F15/G	Conduct Shift Change & Exchange Information		

WORK PROCESS SCHEDULE
CNC OPERATOR – MILLING AND TURNING INTERMEDIATE COMPETENCIES
(CONT.)
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
	<i>Turning Set-up & Operations</i>	n/a	
E17 ✓	Startup Machine, Run Warm-up Cycle & Shut Down Machine (Set-up)		
G16 ✓	Re-start CNC for Turning Operations		
E1	Install/Indicate Chucking Devices (Set-up)		
E3	Bore Soft Jaw (Turning)		
E8 E21 ✓ E4	Install/Setup Tooling (Set-up) Adjust/Edit Tool & Turning Work Offsets Install “Live” Tooling		
E2	Install/Indicate Turning Workholding Fixtures (Set-up)		
E16	Check Position & Verify Delivery of Coolants and Fluids for Turning Operations (Set-up)		
E6	Prepare, Adjust & Load Bar Feeder (Set-up)		
E14	Set/Verify Hydraulic Pressures (Set-up)		
G5 ✓	Inspect Turned Parts in Accordance With Inspection/Process Plan		
G6	Monitor, Control & Adjust Turning Processes (Turning Operations)		
G3	Identify/Replace Worn Tooling (Turning Operations)		
G1	Load, Feed & Unload Turned Work pieces (Turning Operations)		
	<i>Milling Set-up & Operations</i>	n/a	
D10 ✓	Start Mill, Run Warm-up Cycle & Shut Down Machine (Set-up)		
F17 ✓	Re-start CNC Milling Operations (Milling Operations)		
D1 ✓	Install & indicate Work holding Fixtures (Set-up)		
D3 D16 ✓	Install/Set Tooling (Setup) Adjust/Edit Tool Offsets & Work Offsets		
F1	Load, Feed & Unload Milled Work pieces (Milling Operations)		
F3	Replace or Identify Worn Tooling (Milling Operations)		

WORK PROCESS SCHEDULE
CNC OPERATOR – MILLING AND TURNING INTERMEDIATE COMPETENCIES
(CONT.)
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1100CB

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
F5	Inspect Milled Parts for Compliance While Adhering to Frequency of Inspections (Milling Operations)		
F6	Monitor, Adjust & Control Milling Processes (Milling Operations)		
H8	Prepare Parts for Secondary Operations (Benchwork)		
H1 ✓	Deburr Finished Parts (Benchwork)		
H11	Engrave, Stamp or Etch Part ID's or Spec's on Work pieces (Benchwork)		
F10/G	Separate/Segregate Good Parts From Bad Parts (Milling & Turning)		
F9/G	Tag Parts for Traceability (Milling & Turning)		
A12 A6 ✓	Measure GD&T (Inspection) Measure Part Features, Profiles & Dimensions Optically, Comparatively or Using CMM (Inspection)		

WORK PROCESS SCHEDULE
CNC OPERATOR – MILLING AND TURNING: ADVANCED LEVEL
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1100CB
Training Requirements Assessment: CNC Operator Advanced
Competencies

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
E15	Load Work piece for First Article training Operations (Set-up)		
E12	Dry Run/Prove Out CNC Turning Programs (Setup)		
E18 E19 E20	Turn First Part/s (Set-up) Inspect First (Article) Piece part/s for Quality and Compliance Adjust/Edit CNC Turning Programs		
E13	Calibrate Tool and Turning Probes (Turning Set-up)		
G4	Establish Tool Life Benchmarks (Turning Operation)		
D8	Load Work piece for First Article Milling Operations (Set-up)		
D7	Dry-Run/Prove Out CNC Milling Programs (Set-up)		
D13 D14 D15	Mill First Part/s (Set-up) Inspect First (Articles) Piece parts for Quality and Compliance Adjust/Edit CNC Milling Programs (Set-up)		
D11	Calibrate Spindle & Tool Probes (Milling Set-up)		
F4	Establish Tool Life Benchmarks (Milling Operations)		
J2	Find Out Why Tooling has Broken Or Showing Premature Wear		
J1	Determine (Isolate the cause of) why Chatter has Occurred		
J6	Respond to (Isolate the cause of) Machine Control Alarms		
J7	Respond to (Isolate the cause of) Missing or Out-of-Tolerance features on a Part		
J8	Find Out Why a Part has Excessive Burr		

WORK PROCESS SCHEDULE
CNC OPERATOR – MILLING AND TURNING ADVANCED COMPETENCIES
O*NET-SOC CODE: 51-4034.00 RAPIDS CODE: 1094CB
(Prep Checks in Bold)

Task Code	OJL Activity	Date Competency Started	Date Competency Completed
B12	Sequence Machining and Secondary Operations (Job Planning)		
B4	Determine Raw Material Needs for Job (Job Planning)		
E15	Load Work piece for First Article training Operations (Set-up)		
E12	Dry Run/Prove Out CNC Turning Programs (Set-up)		
E18 E19 ✓ E20	Turn First Part/s (Setup) Inspect First (Article) Piecepart/s for Quality and Compliance Adjust/Edit CNC Turning Programs		
E13	Calibrate Tool and Turning Probes (Turning Set-up)		
G4	Establish Tool Life Benchmarks (Turning Operation)		
D8	Load Workpiece for First Article Milling Operations (Set-up)		
D7	Dry-Run/Prove Out CNC Milling Programs (Set-up)		
D13 D14 ✓ D15	Mill First Part/s (Set-up) Inspect First (Articles) Piece parts for Quality and Compliance Adjust/Edit CNC Milling Programs (Set-up)		
D11	Calibrate Spindle & Tool Probes (Milling Set-up)		
F4	Establish Tool Life Benchmarks (Milling Operations)		
J2	Find Out Why Tooling has Broken Or Showing Premature Wear		
J1 ✓	Determine (Isolate the cause of) why Chatter has Occurred		
J6	Respond to (Isolate the cause of) Machine Control Alarms		
J7	Respond to (Isolate the cause of) Missing or Out-of-Tolerance features on a Part		
J8	Find Out Why a Part has Excessive Burr		

**NIMS COMPETENCY-BASED APPRENTICESHIP SYSTEM
SPECIFIC COMPETENCY ASSESSMENT**

NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off each Company Specific Competency as the apprentice demonstrates a level of proficiency that is equivalent to a journeyworker level employee.

NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING COMPANY SPECIFIC COMPETENCIES

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____

DATE: _____

SUPERVISOR'S SIGNATURE: _____

DATE: _____

**NIMS COMPETENCY-BASED
APPRENTICESHIP SYSTEM
COMPANY SPECIFIC COMPETENCY RECORD
NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Provide the *Date the Training Started* for each company specific competency, the *Date the Competency was attained*, are required for the apprentice to attain each company specific competency.

1.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

2.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

3.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

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DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

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DATE COMPETENCY ATTAINED

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DATE TRAINING STARTED

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11.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
12.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
13.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
14.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
15.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
16.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
17.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
18.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
19.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
20.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
21.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
22.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
23.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>
24.	<u>DATE TRAINING STARTED</u>	<u>DATE COMPETENCY ATTAINED</u>

25.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

26.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

27.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

28.

DATE TRAINING STARTED

DATE COMPETENCY ATTAINED

RELATED INSTRUCTION RECORD

NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING

APPRENTICE: _____ EMPLOYEE NUMBER: _____
 SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off each completed Related Instruction Course. Satisfactory completion may be determined by the apprentice's ability to attain the required Core and company specific competencies and corresponding NIMS Credentials.

NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING RELATED INSTRUCTION COURSES

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING CREDENTIALING RECORD

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off the NIMS Credential when the apprentice meets both the hands-on assessment and theoretical examination requirements and is awarded the NIMS Credential.

NIMS CREDENTIALS ALIGNED WITH CORE COMPETENCIES

1.	Measurement, Materials, and Safety	
2.	CNC Operations - Milling	
3.	CNC Operations - Turning	
4.	Job Planning, Benchwork, and Safety	
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NIMS CREDENTIALS ALIGNED WITH COMPANY SPECIFIC COMPETENCIES		
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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING
JOB PERFORMANCE ASSESSMENT FORM**

APPRENTICE: _____ EMPLOYEE NUMBER: _____

SUPERVISOR: _____ DEPARTMENT: _____

INSTRUCTIONS: Check-off the Job Performance Criteria as the apprentice meets the terms and conditions contained within the Standards of Apprenticeship, including the Sponsor's rules and policies, and completes all assignments as the Sponsor may deem necessary to develop a level of competency and proficiency equivalent to a journeyworker Machinist.

**NIMS CERTIFIED CNC OPERATOR – MILLING AND TURNING JOB PERFORMANCE ASSESSMENT
CRITERIA**

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COMMENTS: _____

APPRENTICE'S SIGNATURE: _____ DATE: _____

SUPERVISOR'S SIGNATURE: _____ DATE: _____

**SAMPLE COMPLETION
MEMO**

LETTERHEAD OF APPRENTICESHIP SPONSOR

DATE OF LETTER

MEMORANDUM FOR: REGISTRATION AGENCY

ADDRESS OF REGISTRATION AGENCY

FROM: APPRENTICESHIP SPONSOR

SUBJECT: Request for Certificate of Completion of Apprenticeship

The following apprentice has satisfactorily completed the requirements of the Standards of Apprenticeship registered with the **REGISTRATION AGENCY** for the occupation of **NIMS Certified CNC Operator- Milling and Turning**. See the attached **Application for Certification of Completion of Apprenticeship** for details.

The apprentice has completed all on-the-job learning and related instruction requirements, and attained the required Core Competencies and corresponding NIMS Credentials as defined in the Core Competency Requirements for a **NIMS Certified CNC Operator- Milling and Turning**. In addition, the apprentice has demonstrated a level of competency and proficiency equivalent to a journeyworker level employee.

It is recommended that a **Certificate of Completion of Apprenticeship** be awarded to the completing apprentice.

Thank you for your continued cooperation.

SIGNATURE
OF SPONSOR

SPONSOR'S PRINTED NAME

TITLE