Self-Study Kit for Initial Accreditation

Effective: July 19, 2017

Getting Started:

Review Parts 1—3 of this Self-Study Kit. Complete Parts 4 and 5, then return copies to NIMS within 18 months of submitting a renewal application.

Review

- **Part 1:** **Accreditation Policies**
- **Part 2:** **Program Requirements**
- **Part 3:** **Procedures**

Complete & Return

- **Part 4:** **Self-Evaluation**
- **Part 5:** **Accreditation Forms**

Review

- **Part 6:** **Guide to Credentialing** (testing)
- **Part 7:** **Performance Guide for Machining Level I**

Questions?
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Part 1:
Accreditation Policies

These policies, and subsequent requirements and procedures available in this guidebook which programs receive upon application for accreditation, are approved by action of the Board of Directors of the National Institute for Metalworking Skills, Inc. All fees and policies pertaining to these procedures are identified and subject to change by action of the NIMS Board of Directors.

Revised 07/19/2017

Self-Study Kit: Part 1 — Policies

Accreditation 1-2-3

1 — Submit to NIMS an Application for Accreditation with the Application Fee.

2 — Complete components of the Self-Study Kit within 18 months of application submission. During this time instructors must become certified in the NIMS skills credentials for which accreditation is being pursued. At least one student must earn a NIMS credential as well.

3 — Provide payment of the Evaluation Fee to become eligible to host an On-Site Evaluation, where a NIMS Evaluation Team conducts a full program audit.

For more information on any of the policies set forth in this document, please contact NIMS staff:

NIMS
10565 Fairfax Boulevard, Suite 10
Fairfax, Virginia 22030
Phone (703) 352-4971 | support@nims-skills.org

NIMS
National Institute for Metalworking Skills, Inc.

The National Institute for Metalworking Skill, Inc. is a nonprofit organization formed to support the development of a skilled workforce for the metalworking industry. NIMS primary activities include:

- developing, writing, validating, and maintaining skill standards for each industry;
- certifying the skills of individuals against the skill standards;
- accrediting training programs that train to the skill standards and meet NIMS quality requirements; and,
- assisting states, schools, and companies to form partnerships to implement the skill standards, achieve program accreditation, and credential trainees and workers.

Section 1 — Scope of NIMS & Accreditation Program

1.1 NIMS Background

The National Institute for Metalworking Skills, Inc. (NIMS) is a nonprofit (50l.c.3) organization actively promoting a skilled workforce for the metalworking industry in the United States. NIMS develops skill standards as a means to support quality in training programs for preparing metalworkers. NIMS also sponsors a voluntary assessment program allowing students, workers, and trainees to certify their competencies against the skill standards and earn credentials that are recognized nationwide. NIMS also will grant accreditation to programs that meet or exceed NIMS requirements and procedures.

1.2 NIMS Accreditation Program Purpose

The purpose of NIMS Accreditation Program is to improve the quality of training in metalworking. The policies and procedures governing NIMS Accreditation Program and the requirements for maintenance of status are provided in this Self-Study Kit. NIMS sets standards for program content; equipment, tooling, and measuring devices inventory; instructor qualifications; and participation by advisory bodies. NIMS does not specify curriculum nor endorse curricular products, and does not provide training in metalworking.

1.3 Applicant Program Types

There are three program types eligible for NIMS accreditation:

1) Educational Training Programs
2) Company-Based Training Programs
3) Interfirm Training Programs

Interfirm training programs include those run or coordinated through trade associations (or chapters thereof), labor union programs involving multiple firms, or other consortia of companies organized at least in part to sponsor training. Policies for these programs are the same, however requirements and procedures may differ depending on program type.

1.4 Exclusion

Participation in the NIMS Accreditation Program is voluntary. NIMS cannot mandate that training programs be accredited.

1.5 Accreditation Boundaries

NIMS accredits specific education and training programs and not entire institutions or companies.

Section 2 — Program Eligibility for Accreditation

2.1 Eligibility

Eligible programs include:

1) Educational Training Programs —
   Must be within institutions that are accredited by an appropriate regional agency and approved for operation by a state entity. Applies to public and private schools.

2) Formal Company-Based Training Programs

3) Interfirm Training Program

2.2 Program Content

All applicant training programs that focus on machining skills must meet the minimum requirement for program content by selecting a minimum of two skills areas, in addition to the two required, as listed below. These are the areas in which accreditation will be awarded.

Minimum requirements for machining training programs:

1) *Measurement, Materials, & Safety* —
   Quality control and inspection, process management and improvement, general maintenance, industrial safety, and environmental protection

2) *Job Planning, Benchwork, & Layout* — Basic metalworking

3) A minimum of two more machining skills areas from the list below:

CNC Milling: Operations
CNC Milling: Programming & Setup Operations
CNC Turning: Operations
CNC Turning: Programming & Setup Operations
Drill Press I
Grinding I
Milling I (manual)
Turning Operations: Turning Between Centers
Turning Operations: Turning Chucking

CNC Milling II
CNC Turning II
Drill Press II
EDM II (Wire)
EDM II (Plunge)
Grinding II
Milling II (manual)
Turning II (manual)

Machine Building II—Mechanical Assembly

Machine Maintenance, Service & Repair II—Preventive Maintenance

Press Brake—Operate CNC Punch (Turret) II
Press Brake—Operate Non-CNC Drive II

Screw Machining—Operate with Single Spindle II
Screw Machining—Operate with Multiple Spindle II

All applicant training programs that focus on metalforming skills must meet the minimum requirement for program content by selecting a minimum of two skills areas, in addition to the required Metalforming I credential, as listed below. These are the areas in which accreditation will be awarded.

Minimum requirements for metalforming training programs:

1) *Metalforming I* —
   General metalforming: job planning and management, quality control and inspection, process adjustment and improvement, general maintenance, and industrial safety and environmental protection

2) A minimum of two more metalforming skills areas from the list below:

   Stamping—Operate with Single Hit Tooling II
   Stamping—Operate with Compound Dies II
   Stamping—Operate with Progressive Dies II
   Stamping—Operate with Deep Draw Dies II
   Stamping—Operate with Transfer Dies II
   Slide Forming Operations II
   Diemaking II

Applicable to Machining & Metalforming Training Programs when selecting skills areas for accreditation:

NIMS has skill standards and credentials (certifications) for individuals in each of these skills areas. Skill standards are written to different levels of skills. NIMS accredits programs that instruct to the Level I and/or Level II standards. NIMS does not accredit programs instructing to Level III. As of July 1, 2017, NIMS does not offer accreditation for Industrial Maintenance Technology skills but plans to in the future.

Programs seeking accreditation must maintain active credentialing, that is, have students testing for NIMS credentials on an ongoing basis. See Parts 7-8 of this kit for details on testing roles, responsibilities, and procedures.

2.3 Programs with Multiple Training Facilities

Applicant programs with multiple sites are regarded as a single accreditation provided the sites share the same administration, instructors, curriculum, and program purpose. The distance between the sites also must be reasonable enough to allow the On-Site Evaluation Team to review all locations within the two-day evaluation period.

2.4 Organizations with Multiple Training Programs

Organizations with multiple training programs will require separate accreditation for each program if the student population in each program is significantly differs (ex. daytime high school program vs. adult education program in the evenings at the same organization).

2.5 Joint Accreditation

This section is applicable whenever two or more organizations are seeking accreditation as a joint operation. Applicants seeking joint accreditation must state compelling reasons for the joint accreditation and must clearly demonstrate their partnership through formal, written agreements, which demonstrate program progression (either vertical or horizontal), that include articulation agreements, as well as shared facilities and instructors, and joint advisory committees or some coherent combination thereof. Members of this "partnership," as it will be referred to, must understand that each is responsible for every other unit in this partnership.

For example, failure to meet the NIMS credentialing requirements by one unit in this partnership will result in the assigning of probationary status to the failing unit for six months. During this probation, the failing unit must take whatever steps are necessary to correct the deficiency. The other member units of the partnership are required to assist in the correction of the deficiency as well. Should the partnership be unable to resolve the situation within six months, the unit in question will lose its NIMS Accreditation and the partnership will consist only of the remaining passing units within the join operation.

The failing unit will have the opportunity, if the partnership is in agreement, to reapply for NIMS accreditation and rejoin the partnership in Joint Accredited Status.

All units included in the joint partnership will be assessed the application fee individually. The On-Site Evaluation fee will be assessed only once and will provide payment for all units participating in the joint accreditation.

2.6 Accreditation Time Period

Applicant programs have a maximum of 18 months from the date of application submission to complete a Self-Study Kit. After 18 months, the process must be re-initiated or the applicant must submit a written request for deadline extension.

2.7 Lapsed Accreditation

As mentioned above, once awarded NIMS Accreditation is valid for five years. At the end of the five year period a program may voluntarily elect to renew their accredited status. Once the initial five year accreditation has expired, any training program that allows its accreditation to lapse for more than one year will be required to (a) follow the procedures and pay fees for initial accreditation, and (b) meet any additional requirements required for renewal.

Section 3 — Equipment, Tools & Measuring Devices

3.1 General Policy

Applicant programs must provide for access to machine tools and necessary tooling to meet the performance requirements for earning NIMS credentials, as specified in the skill standards. Time-availability and condition of machine tools and tooling must be sufficient to allow achievement of performance requirements.

3.2 Guidelines

A listing for each program content area of equipment, tools, and measuring devices as addressed in the NIMS skill standards is found in Self-Study Kit Part 4.

NIMS does not specify brands for equipment, tooling, or measuring devices. However, all equipment and tooling must address the following issues:

Safety
Equipment and tooling must have all shields, guards, stops, and other safety devices in place, operable, and used.

Type and Quality
Equipment, tooling, and measuring devices used in an accredited program must be of the same type and quality found in the workplace, and must be of sufficient quantity to meet the program goals and allow trainees production use to develop the competencies specified in the skill standards for earning NIMS credentials.

Maintenance
The program must have a preventative maintenance schedule for the equipment and tooling, including recalibration and reconditioning of tooling, so as to minimize downtime.

Replacement
The program should have a schedule for replacement of equipment and tooling in order to maintain the most current safety standards of industry. Input from the program's advisory committee should be used to determine this schedule.

Hand Tools
Each trainee should be encouraged to purchase a hand tool set for use during training.

Tool Crib
Limited access and adequate storage of tooling should be provided by the program. Space for storing the trainee's hand tools should be provided.

Section 4 — Requirements for Initial Accreditation

4.1 Necessary Criteria for Self-Study Kit Evaluation*

Applicant programs must meet the minimum program content as specified in Self Study Kit Part I—Section 2.2. The following two following requirements must also be met:

1) Advisory Committee

For educational and interfirm training programs:

The advisory committee must:

a. Consist of representatives of at least five (5) different metalworking companies

b. Have at least two working meetings per year

c. Have an industry representative as a co-chair

d. Keep minutes of meetings and decisions

For company-based training programs:

The advisory committee must

a. Involve both management and workers

b. Have at least two (2) working meetings per year

c. Keep minutes of meetings and decisions.

2) Safety Requirements

Within the Self-Evaluation the applicant program must rate an average of at least four points on the five point self-evaluation scale in the areas relating to safety.

Facilities are required to meet all applicable industry and OSHA safety standards. Machine tools must be equipped with and have in working order: appropriate shields, guards, stops, and other safety devices. Safety practices and requirements should be included throughout the curriculum and emphasized continually.

Safety and environmental policies should be written and adopted by the administration and governing body for use in decision-making situations and in guiding the program in achieving its goals. Requirements include, but are not limited to, policies and practices in compliance with OSHA for General Industry (29CFR, Part 1910), liability, and EPA compliance for safe handling and operating in the metalworking industry.

*Self-Study Kit items should not be submitted to NIMS until the above requirements can be met.

4.2 Necessary Criteria for On-Site Evaluation

Applicant programs are given a Self-Study Kit to complete in which they rate various aspects of their program on a five point scale. An on-site evaluation will be scheduled if the program scores at least a four on all areas related to safety and the overall score for all other areas averages 3.75 or greater.

4.3 Scheduling an On-Site Evaluation

The On-Site Evaluation will be scheduled only when applicant programs are in session and students/trainees are present.

4.4 Causes for Accreditation Denial

An On-Site Evaluation can result in a recommendation not to award accreditation to an applicant program. Such recommendation often reflects one or more of the following:

a. Existence of "imminent danger" safety hazards
b. Existence of numerous safety violations
c. Significant conflict between the applicant and advisory committee
d. Obvious misrepresentation by the applicant program
e. Inadequate facilities (rooms, equipment, tooling) or program to provide training to NIMS standards

A program receiving denial of accreditation will be granted a six month period to address the reported issues and file a report to NIMS documenting the corrective actions taken. If NIMS determines that a second on-site review to note corrective changes is warranted, the applicant program will be responsible for expenses incurred.

4.5 Trainee Credentialing

Applicant programs must demonstrate an ongoing effort to certify students/trainees in NIMS metalworking credentials. This means evidence must be present that students/trainees are taking NIMS certification exams; it does not require that students/trainees pass the exams.

4.5 Instructor Qualifications & Credentialing

At least one full-time instructor must hold NIMS credentials for each of the skills areas in which accreditation is sought (see 2.2). An instructor may meet this requirement by holding credentials at a higher level (ex. Holding a Milling II credential satisfies the need for Milling I).

4.7 Adjunct & Part-Time Faculty

Adjunct and part-time instructors are not required to hold NIMS credentials.

Section 5 — Recognition of Accreditation

5.1 Recognition Materials

A program approved for accreditation will receive a plaque bearing the NIMS seal and the institutional name of the program. The plaque will identify the skills areas in which the program is accredited, as well as the expiration dates of these accreditations.

Accredited programs also will receive a banner indicating that the program is NIMS accredited.

5.2 Privileges of Accreditation

An accredited program is authorized to display the NIMS banner during the five year accreditation period. Accredited programs may also use the NIMS logo to advertise and promote the program to potential trainees or their families, to advertise that the program meets industry quality standards, and/or to sponsor their trainees for pursuing NIMS credentials.

5.3 Discounts for Accredited Programs

Accredited programs receive a twenty percent discount on Online Credentialing Theory Exam Fees.

5.4 Discounts for Applicants

Effective as of May 1999, all applicant programs will receive the aforementioned discount on Theory Exam Fees upon submission of an application for accreditation.

Section 6 — Adding Skills Areas to an Accreditation

6.1 Adding Skills Areas to an Accreditation

A NIMS-Accredited program may add additional skill skills areas to its accreditation by having instructors earn the relevant NIMS credentials for that additional skill. Any additional skills areas must be within the same level as the skills currently accredited.

Adding skills from NIMS credential levels not currently accredited will require a second On-Site Evaluation.

If approved, the added skills areas will be part of the program's areas of accreditation and will be subject to re-examination and renewal when the initial five year accreditation period expires.

Section 7 — Appeals

7.1 Appeals & Complaints

Programs may appeal if NIMS decides not to award program accreditation or programs may file a complaint regarding the implementation of NIMS procedures. Such appeals/ complaints must be submitted in writing to the Executive Director of NIMS who will assign the appeal or grievance to an Arbiter. The Arbiter will consider the written statement, examine NIMS policies and procedures, interview the parties involved, and submit a finding to NIMS and the complainant. Findings and recommendations of the Arbiter are final and will be acted upon accordingly.

7.2 Revocation

NIMS will consider revoking accreditation from a program when complaints are received, in writing, alleging malpractice or misrepresentation involving the misuse of NIMS accreditation by the program.

An Arbiter will be assigned to review the allegation and determine whether the complaint has substance or should be dismissed. The Arbiter will inform the program of the complaint and finding. If the Arbiter determines that the complaint has substance, the Arbiter will arrange for a hearing before an Accreditation Review Panel. If the program against which a complaint has been filed elects to decline the hearing, the Accreditation Review Panel can find that accreditation should be revoked. In either case, the decision of the Accreditation Review Panel will be final.

Accreditation Review Panel members will be selected by the Arbiter from among individuals certified to lead On-Site Evaluation Teams and educators who provide instruction in metalworking skills. The Panel will have three members, two from industry and one from education.

Section 8 — Evaluation Requirements for Accreditation

8.1 Necessary Criteria

Renewal involves an abbreviated Self-Study Kit which focuses on program improvements, trainee activity data, and the report of safety or environmental problems recorded during the initial accreditation evaluation. Also required:

a. Faculty must hold NIMS Credentials in skills being renewed.

b. Program must show record of maintaining an active, annual credential effort through the initial five (5) year accreditation.

c. Advisory Committee reviews and recommendations must form part of the program's improvement agenda.

d. Program, facility, and faculty must undergo a one-day On-Site Evaluation.

NIMS Program Accreditation Fee Schedule

Fees for Initial Accreditation

Application Fee Due with application; Applicant program will receive a Self-Study Kit upon payment	$1,000
On-Site Evaluation Fee* Due with completed Self-Study Kit	$1,500
Total Cost for Initial Accreditation	**$2,500**

Annual Maintenance Fees

NIMS assesses to actively accredited programs an annual fee to offset the cost of program maintenance and quality improvements throughout the year. The annual fee is $250 and is due on the anniversary of the program's accreditation. NIMS will invoice the program four times during the five-year accreditation term.

Example ***Accreditation awarded March 31, 2018***

Annual fee invoice #1: March 31, 2019 ($250)

Annual fee invoice #2: March 31, 2020 ($250)

Annual fee invoice #3: March 31, 2021 ($250)

Annual fee invoice #4: March 31, 2022 ($250)

Fees for Accreditation Renewal

Application Fee Due with application; Applicant program will receive a Self-Study Kit upon payment	$1,000
On-Site Evaluation Fee* Due with completed Self-Study Kit	$1,500
Total Cost for Renewal *Annual Maintenance Fees assessed after renewal*	**$2,500**

*If total travel costs exceed this amount, the applicant program will be billed appropriately

DISCLAIMER: This schedule is effective January 1, 2018. Rates are subject to change without notice. Applicant programs should contact NIMS prior to final submission of Self-Study Kit to confirm fees.

Self-Study Kit for Initial Accreditation

Effective: July 19, 2017

Part 2:

Program Requirements

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Requirement 1 — Purpose

1.1 General Requirement

The applicant training program should have clearly stated goals that are related to the needs of the trainees and employers served.

1.2 Service Area

The applicant program must define the geographic area that is attempting to serve. The needs assessment should be based upon this defined service area.

1.3 Needs Assessment

The applicant program should be planned in response to the needs of metalworking employers in the program's service area. A needs assessment should be conducted on a regular basis to determine the skills most in demand by metalworking employers in the program's service area.

1.4 Presentation of Program Goals & Requirements

A written description of the program's intentions and goals, to be shared with potential trainees, should include (a) admission requirements, (b) summary of area skills needs, (c) area/s of specialty training in metalworking offered by the program, and (d) the cost of any tuition, fees, or resource and/or tool purchases. The technical qualifications of the instructional staff and the placement records of the program also should be included.

Requirement 2 — Facility Requirements

2.1 General Requirements

The physical facilities for metalworking training must be adequate for preparing individuals to meet the performance requirements to the NIMS Skill Standards and for satisfying the program's goals. The ratio of trainees-to-workstations must allow for practice time sufficient for the trainees to make the parts or otherwise develop the competencies that meet the requirements of the respective performance standards.

2.2 Safety

Facilities are required to meet all applicable industry and OSHA safety standards. Students/trainees, instructors, and visitors must comply with all relevant safety rules.

2.3 First Aid

The facility should insure the ready availability of medical supplies, this includes personnel who are trained as on-site first responders, or that a hospital is in near proximity. Eye or body washing stations should be available in the event of exposure to corrosive material. A first aid kit should be in place and in compliance with industry regulations and standards. Trainees should be aware of the first aid facilities and instructed in appropriate procedures.

Requirement 2 — Facility Requirements

2.4 Tooling & Material Storage

Limited access to tooling crib and material storage areas should be sufficient to support the program's objectives and performance requirements.

2.5 Maintenance

A program of regular facilities maintenance should be in place and followed to ensure that the machine tools and tooling will meet the accuracy requirements of the skill standards. NIMS recommends that a maintenance schedule be kept for all metalworking equipment. It is recommended that regular cleaning of the equipment be a part of the trainee's responsibilities.

2.6 Support Facilities

Support facilities should include: (1) an instructional classroom convenient to but separate from the metalworking shop area, (2) an office for the instructional staff convenient to but separate from the metalworking shop area, and (3) restrooms, cleanup areas, and lockers for male and female trainees that are convenient to the instructional and metalworking shop areas.

2.7 Housekeeping

All rooms should be kept clean, orderly, and subject to a regular schedule of cleaning. Metal chips and other metal scrap, lubricants, cutting fluids, and coolants should be handled in accordance with applicable environmental codes.

2.8 Facility Evaluation

The applicant program's industry Advisory Committee should conduct annual evaluations of the training facilities to ensure adequacy to meet program goals.

Requirement 3 — Equipment, Tooling, & Measuring

3.1 General Requirements

Programs seeking accreditation must provide for access to machine tools and necessary tooling to meet the performance requirements specified in the NIMS Skill Standards for earning skills credentials. The time availability and condition of the machine tools and tooling must be sufficient so as not to be a factor that unduly limits achievement of performance goals.

3.2 Equipment, Tooling, & Measuring Devices

Each facility, equipment, tooling, and measuring device inventory will be judged for its adequacy in supporting the curriculum. The overall program will be assessed in its ability to allow trainees sufficient machine time to develop skills needed to meet NIMS performance requirements for earning NIMS skills credentials.

3.3 Safety

All machine tools used by the applicant program must be equipped with appropriate shields, guards, stops, and other safety devices. All safety features must be in working order and used.

3.4 Materials

The program must provide for a sufficient supply of materials (e.g.; metal blocks for machining or sheet stock for forming) and consumables (e.g.; cutting fluids, coolants) to ensure continuous instruction.

Requirement 4 — Requirement Program Features

4.1 General Requirements

NIMS does not promote or otherwise recommend how a training program should be designed nor represent curricular materials for adoption. NIMS does, however, expect certain program features which it deems important to ensuring training that is thorough, current, in accord with industry needs, and provides the trainee the opportunity to earn industry recognized, portable NIMS credentials.

4.2 Metalworking Industry Advisory Committee

An industry Advisory Committee must be formed and given substantive roles in assisting the program in the design, implementation, and fulfillment of its goals. The Advisory Committee must (a) consist of representatives from at least five (5) different metalworking companies, (b) have at least two (2) working meetings per year, (c) have an industry representative as co-chair, and (d) keep minutes of meetings and decisions.

Programs are encouraged to work with local chapters of metalworking trade associations, where such exist, in forming and maintaining an industry Advisory Committee.

4.3 Performance Standards

All instruction should be performance based, intent on satisfying the knowledge and performance requirements of the NIMS Skill Standards for earning skills credentials. Trainees should be advised of the applicable skill standards at the outset of the instructional program and encouraged to earn the appropriate NIMS credentials.

4.4 Safety

Safety practices and requirements should be included throughout the curriculum and emphasized on a continuing basis. Trainees and instructional staff are expected to practice good safety procedures at all times in the use of machine tools, tooling, as well as in the conduct of benchwork, in wearing appropriate clothing and personal protective equipment (including, but not limited to eye, ear, foot and head protection) when working; in keeping machines and work areas clean and as free from metal chips or other scrap as possible; and in handling, storing and disposing of chemicals, rags, and scrap, and other potentially hazardous materials.

4.5 Needs Assessment

The program plan must be based on current needs assessment of the metalworking industry in the program's service area. The needs assessment should identify those skills most in need in the service area. The program plan should address skills that are in demand in the service area.

4.6 Program Plan

The program should have stated goals, be designed to proceed in logical steps, and include part prints and experiences that satisfy the performance requirements of the NIMS skill standards for earning skills credentials. The program plan should provide for sufficient flexibility to adapt to changing circumstances, and be made available to the Advisory Committee and trainees.

4.7 Instructional Load

The trainee-to-instructor ratio and available classroom/metalworking shop time should allow for interaction on a one-on-one basis.

4.8 Curriculum

NIMS does not specify nor endorse specific curricular products. The Applicant program should, however, demonstrate that the proposed curriculum is performance based and is designed to meet the applicable NIMS skill standards, including the related theory or knowledge skills required for pursuing NIMS skills credentials.

NIMS does not require that an applicant program be self-contained in meeting all of the NIMS skill requirements for the areas petitioned for accreditation. However, education programs must offer at least two machine-specific operations areas for which the instruction and machine usage by the trainees is contained within the program. When more than two machine operations areas are offered by a program, some of the instruction and/or machine usage may be articulated through other programs or cooperative agreements with other training suppliers (including metalworking companies) in order to provide the necessary instructional and learning opportunities for the students/trainees. Such articulation and/or cooperative agreements must be documented and the applicant program must show where the particular tasks are taught, by who, and how trainees are evaluated.

4.9 Work Habits & Ethics

The applicant program should be organized in such a manner that work habits and ethical practices required on the job are an integral part of the instruction. Such work habits and practices include, but are not limited to, punctuality, attendance, dependability, attention to instructions, concern for accuracy, personal pride in quality of work, honesty, developing time efficient work habits, and respect for workers, trainees, etc.

4.10 Differences in Speed of Learning

The program design should address and accommodate different rates of learning among trainees.

4.11 Related Instruction

Instruction in related mathematics, reading, communications, metalworking theory, and reading of engineering drawings, as specified in the NIMS skill standards, should be provided and coordinated with the applicant program on an ongoing basis. Instruction in these areas should be provided by qualified instructors who are encouraged to become familiar with the needs and uses of their discipline area in the metalworking industry.

4.12 Workplace-Based Components

Structured workplace-based components in the program design are highly recommended. NIMS credentialing procedures emphasize problems and contexts that are common to the metalworking workplace. Trainees who have no opportunity to experience training in a metalworking company may be disadvantaged when taking the credentialing exams. Workplace-based components should be structured with goals and specific learning objectives, a structure schedule of activities, and a plan for evaluating trainee performance in the workplace setting.

4.13 Skill Competitions

Opportunities for trainees to participate in skill competitions are highly recommended. NIMS credentialing procedures emphasize performance to tolerance and accuracy requirements in the use of metalworking equipment and tooling. Skill competitions, such as those provided by the Vocational Industrial Clubs of America (VICA), offer opportunities for students and trainees to demonstrate their skills in time constrained settings, emphasizing accuracy and encouraging mastery of machine using skills that are stressed on-the-job.

4.14 Trainees Activity Data

The applicant program must provide data on enrollments in the metalworking courses and program, and must report performance results to include (a) percentage of trainees passing NIMS credentialing exams, (b) percentage of trainees attempting NIMS credentialing exams, (c) percentage of program trainees placed in metalworking jobs within six (6) months of program completion, and (d) percentage of program completers continuing in training.

4.15 Reference Resources

The applicant program must provide trainees with access to reference resources common to industry. At a minimum, these reference resources should include at least one copy of *Machinery's Handbook* that is not older than 5 years preceding the current edition, as well as current general and technical metalworking magazines and papers. These reference resources should be available in the metalworking shop area. A student version of *Machinery's Handbook* is also available and it is recommended that students and trainees purchase this volume.

4.16 Promotion, Counseling, & Placement

The program plan should include specific steps to promote the opportunities for careers in metalworking to potential trainees and their parents or families. It also should explain how counseling services are provided for trainees and how such services are kept informed of the needs and opportunities in the industry. The plan also should include a systematic means to assist trainees in finding placement into metalworking positions.

4.17 Articulation

The applicant program must demonstrate efforts to articulate its curriculum and criteria defining success, including workplace-based components, to related programs in which trainees could enroll to pursue further training and education. Related programs can include further training and education in schools, apprenticeship programs, company-based training programs, or military training opportunities.

4.18 Instructional Evaluation

Instructional procedures and effectiveness should be evaluated on a regular and systematic basis involving self-evaluation and surveys of former trainees. Instructional procedures should demonstrate a responsiveness to the feedback from these evaluations.

Requirement 5 — Administration

5.1 General Requirements

Administrative policy and practice must evidence support and promotion of the metalworking program, including adequate financial support to meet and maintain accreditation requirements.

5.2 Administrative Support

The applicant program must be positively supported by the institution of which it is a part and by the local governing body. Examples include: support of staff in-service training in the metalworking industry; on-going provision of reference resources; active participation in the program's Advisory Committee; and financial provision for tool replacement and update, machine tool maintenance and acquisition, training support materials, and consumable supplies.

5.3 Safety & Environmental Policies

Policies should be written and adopted by the administration and governing body for use in decision-making situations and in guiding the program in achieving its goals. Requirements include, but are not limited to, policies and practices in compliance with OSHA for General Industry (29CFR Part 1910), liability, and EPA compliance for safe handling and operating in the metalworking.

5.4 Reporting

Written policies and reporting procedures should exist and be understood by the metalworking instructional staff regarding curriculum decision-making, materials, equipment, and tooling acquisition and maintenance

5.5 On-Going Investment

The institutional administration and governing body must explain how the necessary access to machine tools, tooling, and measuring devices is provided on an on-going basis. This should include (a) the maintenance of the machine tools to keep them in good, operational condition, (b) calibration for accuracy, (c) and current digital readout devices common to the industry.

Requirement 6 — Instruction Staff Qualifications

6.1 General Requirements

The instructional staff in the applicant program must evidence the experience and technical competency appropriate to the proposed metalworking program.

6.2 Technical Competency

Instructional staff must hold NIMS credentials in the areas being petitioned for accreditation. This means the instructional staff must meet applicable performance and credentialing exam requirements for the skills areas considered for accreditation.

6.3 Instructional Competency

Instructional staff should hold an appropriate degree or state certification for metalworking instruction or have completed a minimum of five (5) years of full-time on
- the-job experience in metalworking.

6.4 Industry In-Service Experience

Instructional staff in the applicant program are expected to maintain technical competencies and understandings of practices, technology, and work organization in the industry through regular in-service experiences with metalworking companies. Such experiences can range from actual production work using metalworking machinery to job shadowing, formal observation of machine usage practices, and others. The interval between experiences should not exceed five (5) years. The program should include the desired learning outcomes for instructional staff when in-service experiences are scheduled.

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Self-Study Kit for Initial Accreditation

Effective: July 19, 2017

Part 3:

Procedures

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Section 1 — Procedures of Initial Accreditation

1.1 Initial Petition to NIMS

The applicant program must submit a formal application for Accreditation. In exchange NIMS will send the program the Self-Study Kit, An application fee is due with submission of the application.

1.2 Program Self-Study

The applicant program must complete and file its Self-Study Kit with NIMS. A period not to exceed eighteen (18) months is allowed for completion of the Self-Study Kit and all of its components. The Self-Study Kit includes:

Part 1 — Policies (this document)

Part 2 — Program Requirements (informational booklet)

Part 3 — Procedures (informational booklet)

Part 4 — Self-Evaluation for Initial Accreditation

Topics of self-evaluation include:

- Program Purpose & Goals
- Facility
- Equipment & Tooling
- Program Features & Curriculum
- Instructional Staff Qualifications
- Reporting/Decision-Making Processes (curriculum, materials, tooling, & equipment)
- Improvement Statement & Implementation Plan for Weak Areas of Evaluation

Part 5 — Initial Accreditation Forms

- General Program Information
- Identification of Metalworking Areas of Instruction
- Program Liaison & Administrator
- Advisory Committee Listing
- Local Employer Listing

Part 6 — Procedures Manual for NIMS Online Credentialing Program (informational booklet)

Part 7 — Performance Guide for Machining Level I (informational booklet)

The filing of the Self-Study Kit constitutes the applicant's request for an On-Site Evaluation. Reference documentation materials as called for in the Self Study should NOT be sent to NIMS. Reference documentation should be organized into a binder and kept at the program location for the On-Site Evaluation Team to review.

1.3 NIMS Self-Study Kit Review

NIMS will review an applicant program's Self-Study within an average of thirty (30) days. The NIMS review will result in one of the following decisions:

a. Request for additional information or clarification
b. A decision to proceed with the request for an On-Site Evaluation
c. A decision that the program does not meet the NIMS policies and requirements, in which case NIMS will return the On-Site Evaluation Fee to the applicant program.

1.4 On-Site Evaluation Team

Given a favorable review of the applicant program's Self-Study Kit, NIMS will form an On-Site Evaluation Team. The Evaluation Team consists of three members:

a. A Certified Evaluation Team Leader (from industry)
b. A Representative from Industry
c. A Representative from Education (nominated by the applicant program according to the terms specified in Part 3 — Section 3.3)

NIMS will inform the applicant program's liaison of contact information for the Evaluation Team Leader, who will contact the program liaison to establish details of the On-Site Evaluation.

NIMS will endeavor to form On-Site Evaluation Teams in a manner to keep the expenses to the applicant program to a minimum. NIMS will encourage companies to donate the time and expenses of employees who serve on On-Site Evaluation Teams.

1.5 Arrangements for the On-Site Evaluation

The Evaluation Team Leader will contact the applicant program's liaison to arrange dates for the On-Site Evaluation. Interviews with instructional staff, administrative personnel, advisory committee members, local employers, and trainees, as well as trainee observations, facility inspections, and documentation reviews will be arranged by the Evaluation Team Leader and program liaison.

1.6 On-Site Evaluation

The On-Site Evaluation should be completed within two (2) consecutive days. Sample agenda:

a. Prior to Evaluation Day #1 — The Evaluators meet to assign roles, review evaluation procedures, reporting requirements, and confidentiality expectations.
B. Evaluation Day #1 — Facility and documentation review; interviews with instructional staff, administrative personnel, as well as trainee interviews and observations
c. Evaluation Day #2 — Interviews with sampling of Advisory Committee members and local employers, plus an exit interview with instructional staff and program liaison
d. End of Day #2 — Evaluation Team meeting to complete evaluation recommendation report, which will be submitted to NIMS.

1.7 Employer Interviews

Employer interviews are a key component of the On-Site Evaluation. Five (5) employers will be interviewed, selected from the list provided by the applicant program in Self-Study Kit Section V. Some employers listed for interviews should also be Advisory Committee members. These interview will focus on employer satisfaction with the program, its graduates, and the employers' perception of the cooperativeness of the program.

1.8 NIMS Accreditation Decision

NIMS assess the Evaluation Team's final ratings and recommendations, then decides on the accreditation status for the applicant program, which could be one of the following:

a. Award accreditation. This requires an average rating of at least 3.75 occurs in all six sections of the Self-Study Evaluation and a positive recommendation from the On-Site Evaluation Team.

b. Deny accreditation. This occurs when an average rating of less than 3.75 occurs in all six (6) sections of the Self-Study Evaluation or when a negative recommendation from the On-Site Evaluation Team is made. In this case NIMS will issue a report to the applicant program to note any areas of question or recommended improvements.

1.9 Accreditation Denial

If an On-Site Evaluation results in a recommendation not to award accreditation, it usually will reflect of or more of the following citations:

a. Existence of "imminent danger" safety violations
b. Existence of numerous safety violations
c. Significant conflict between the program and the Advisory Committee
d. Obvious misrepresentation by the applicant program
e. Inadequate facilities (rooms, equipment, tooling) or program to train to NIMS skill standards

A program receiving denial of accreditation will be granted a six (6) month period to address the reported issues and file a report to NIMS documenting the corrective steps and resulting changes. If NIMS determines that corrective actions properly address cited concerns, accreditation will then be awarded. If NIMS determines that an additional On-Site Evaluation is warranted to review the changes, the applicant program will be responsible for expenses incurred.

Section 2 — Procedures of Accreditation Renewal

2.1 General Procedures for Renewal

Accreditation renewal will require the applicant program to submit an application for renewal, an abbreviated Self-Study Kit, and to host a one day On-Site Evaluation.

2.2 Renewal Requirements

Programs petitioning for accreditation renewal must complete an abbreviated Self-Study Kit for Accreditation Renewal. The renewal kit will focus on improvements to the program, trainee activity data, and report of any safety or environmental problems that have been recorded during the initial five-year period of accreditation.

Additionally, the instructional staff must hold NIMS credentials in the skills areas in which accreditation renewal is sought. Records of annual facility reviews by the industry Advisory Committee must be available. Recommendations from these reviews should form part of the improvement agenda for the program. A one (1) day On-Site Evaluation will be required.

2.3 On-Site Evaluation for Accreditation Renewal

The On-Site Evaluation should be completed within one (1) day. Sample agenda:

a. Prior to Evaluation Day #1 — Evaluator reviews evaluation procedures, reporting requirements, and confidentiality expectations.
b. Evaluation Day #1 — Facility and documentation review; interviews with instructional staff, administrative personnel, as well as trainee interviews and observations. Interviews with sampling of Advisory Committee members and local employers, plus an exit interview with instructional staff and program liaison
c. End of Day #1 — Evaluator completes a recommendation report, which will be submitted to NIMS.

The schedule will be very tight and demanding, therefore well planned and facilitated meetings and interviews will be mandatory. The Evaluation Team Leader submits an On-Site Evaluation report and recommendations to NIMS.

2.4 NIMS Renewal Decision

NIMS assess the On-Site Evaluation Team Leader's report and recommendations, and decides on the renewal status for the applicant program, which will result in one of the following decisions:

a. Award accreditation renewal. This requires an average rating of at least 4.0 on all sections of the Self-Evaluation and a positive recommendation from the On-Site Evaluation.
b. Deny accreditation renewal. This occurs when a Self-Evaluation receives an average rating of less than 4.0 in all sections or when a negative recommendation results from the On-Site Evaluation Team. NIMS then issues a report to the applicant program, noting any areas of question or recommend improvements.

2.5 Accreditation Denial

An On-Site Evaluation can result in a recommendation not to be awarded accreditation renewal and such a recommendation usually will reflect one or more of the reasons outlined in Self-Study Kit Part 3 — Section 1.9. An applicant program receiving denial of accreditation renewal will be granted a six month period to address the reported issues and file a report to NIMS documenting the corrective steps and resulting changes. If NIMS determines that an additional On-Site Evaluation of the changes is warranted, the applicant program will be responsible for expenses incurred.

Section 3 — On-Site Evaluation Team Members

3.1 General

Certified Evaluation Team Leaders are individuals with experience in metalworking as a tradesperson manager, or as a trainer. Whenever possible, evaluators are selected from among nominees made by the trade associations participating with NIMS.

3.2 Certified Evaluation Team Leaders

Certified Evaluation Team Leaders are from the metalworking industry and meet tow (2) sets of mandatory criteria:

a. Completion of NIMS Evaluation Team Leader Training
b. Assume no association as a graduate of, advisor to, or former instructor within the applicant program.

Additionally, a Certified Evaluation Team Leader must meet one of the following criteria:

a. Have a minimum of six (6) years of experience as a tradesperson and/or manager in a metalworking company.
b. Have a minimum of three (3) years experience in a metalworking company as an in-company trainer, mentor, or director of training.
c. Be an approved instructor in a metalworking training program run by a trade association, union, or consortium of companies.

Team Leader re-certification is automatic if an individual has served as a Team Leader and if NIMS has not received complaints from applicant programs concerning the professional conduct of the review. Additional training will be required if an individual does not lead an On-Site Evaluation or if complaints have been received.

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Effective: July 19, 2017

Part 4:

Applicant Program's Self-Evaluation for Initial Accreditation

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Self-Study Kit: Part 4 — Self-Evaluation

Section 1 — Instructions for Completing the Self-Evaluation

1.1 Review Parts 1—3 of this Self-Study Kit, then carefully review the prerequisites for the Self- Evaluation.

1.2 Identify an individual to coordinate completion of Self-Study Kit requirements, particularly this Self-Evaluation. This is usually done by a program administrator or instructor, who also serves as program liaison in facilitating the On-Site Evaluation once the Self-Evaluation has been approved by NIMS.

1.3 A Self-Evaluation steering committee is recommended and may choose to divide the responsibilities for reviewing and completing components of the Self-Study Kit. This committee may consist of instructors, advisory committee members, administrative personnel, and others at the applicant program's discretion.

1.4 The Self-Evaluation should involve direct observations of the applicant program's operations, curriculum, facilities, equipment and tooling support, as well as discussions with instructional staff, administrative personnel, and trainees.

1.5 When completing the Self-Evaluation, all responses are rated on a five point scale unless otherwise requested. When rating, document the location of the information used to justify the score (ex. brochures, advisory committee meeting minutes, personnel handbook, budget reports, etc.). This information should be entered on the line labeled "Reference Documentation."

1.6 The Steering Committee should review the completed Self-Evaluation before submission to NIMS. This will help avoid incomplete filing and speed the process. If more than one individual rates a given item, the ratings should be averaged by adding the ratings and dividing by the number of raters. The results should be reported for such items on the Self-Evaluation Form that follow.

1.7 Send Self-Study Kit Part 4 (Self-Evaluation) and Part 5 (Accreditation Forms) to NIMS, retaining a copy for program records.

1.8 Assemble copies of all materials cited as reference documentation into a single file or Notebook. The file will be used by the On-Site Evaluation Team to validate the Self-Evaluation ratings and to conduct the On-Site Evaluation. NIMS recognizes that some information must be maintained in separate files due to confidentiality concerns.

<u>The On-Site Evaluation Team must have access to reference documentation.</u>

Section 2 — On-Site Evaluation

2.1 The On-Site Evaluation Team will be rating many of the same items as the program's Self-Evaluation. Please review Part 3 — Section 1.6 of this Self-Study Kit.

2.2 It is essential that the On-Site Evaluation Team have access to all information and reference documentation that the program used in doing its Self-Evaluation. It is strongly recommended that these materials be organized and labeled according to the requirements that they address.

2.3 The On-Site Evaluation Team should have a private office or area separate from other activities to review the documentation and to use for team discussions.

2.4 The On-Site Team should have an opportunity to observe a class using the metalworking shop or laboratory. A tour of the shop and its supporting facilities should be arranged for the Team. Team members may opt to ask questions of individual trainees during their observation period. Such is common practice when companies are being audited for quality accreditation.

2.5 The On-Site Evaluation Team will interview a minimum of five employers from the list provided by the applicant program. The On-Site Evaluation Team Leader will select the employers to be interviewed.

2.6 Upon completion of the On-Site Evaluation, the Team Leader will share with the program the Team's views of the general strengths of the training program. The Team Leader cannot advise the program of the Team's recommendations to NIMS nor inform the program of NIMS' decision regarding accreditation. NIMS will issue a report to the program regarding the accreditation decision after all materials and reports have been reviewed.

Prerequisites for NIMS Accreditation

All of the following questions MUST be answered with a YES response. If the applicant program is unable to do so, DO NOT submit the Self-Evaluation to NIMS until such time that all prerequisites are satisfied.

- ☐ Have the NIMS Skill Standards been incorporated into the applicant training program's curriculum and program evaluation?
- ☐ Do instructors have a clear understanding of the credentialing process, including the role of the MET-TEC Committee?
- ☐ Have all instructors earned NIMS credentials in the skills that they teach an in which accreditation is sought?
- ☐ Do Advisory Committee members have copies of the NIMS Performance Guide to Machining Level I and/or II, which contains performance requirement guides for NIMS Credentials?
- ☐ Has the Advisory Committee reviewed the performance requirements for the credentials in which the applicant program is seeking accreditation?
- ☐ Is the Advisory Committee knowledgeable of the use of NIMS credentials in recruiting and hiring employees?
- ☐ Has the Advisory Committee been involved with the completion of the Self-Study Kit?
- ☐ Are ALL trainees aware of NIMS credentialing opportunities to earn national, industry-recognized skills certifications?
- ☐ Are ALL trainees aware of the performance requirements involved in earning a NIMS Credential?
- ☐ Has at least one student earned a NIMS credential?
- ☐ Does the applicant program have the support of the administration?
- ☐ Does your facility meet the applicable OSHA requirements?

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Applicant Metalworking Program Self-Evaluation

INSTRUCTIONS: Please complete the following Self-Evaluation. For all items requiring Reponses on a 5-point scale, please use the following reference:

5	=	Exceptional
4	=	Above Average
3	=	Average or Otherwise Adequate
2	=	Somewhat or Needs Improvement
1	=	Not At All

Please provide an improvement statement for any rated item in this Self-Evaluation that is given a score of three (3) or below.

Requirement 1 Purpose

The applicant metalworking program should have clearly stated goals that are related to the needs of the trainees and employers served.

1.1 Geographic Service Area

_____ A. Rate the extent to which the program's geographic service area is defined and incorporated into program planning.

_____ B. Approximately how many metalworking employers are in the program's service area?

_____ C. What percent of metalworking employers in the program's service area are surveyed for skill needs information?

_____ D. What percent of employers surveyed actually responded?

Reference Documentation _____

_____

_____

Requirement 1 Purpose *(continued)*

1.2 Needs Assessment

_____ A. Rate the extent to which the metalworking skill needs of employers in the program's service area are known.

_____ B. Rate the correspondence between the emphasis of the metalworking program and the skill needs of employers in the program's service area.

Reference Documentation _____

_____

_____

1.3 Presentation of Program Goals & Requirements

A. Rate the program material (s) available to potential trainees on the inclusion of the following:

_____ i) Admission requirements

_____ ii) Summary of area metalworking skills needs

_____ ii) Area (s) of specialty training offered

_____ iv) Cost of tuition, fees, and special resources

_____ v) Technical qualifications of instructional staff

_____ vi) Placement record of the program

_____ vii) Overall goals of the program

Reference Documentation _____

_____

_____

Requirement 2 Facilities

The physical facilities for metalworking training must be adequate for preparing individuals to meet the performance requirements of the skill standards and satisfying the program's goals. The ratio of trainees-to-workstations must allow for practice time sufficient for the trainees to make parts or otherwise develop the competencies that meet the requirements of the respective performance standards.

2.1 Safety

_____ A. Rate the extent to which the shop facilities address applicable safety standards.

_____ B. Rate the degree to which all trainees, instructors, and visitors comply with all relevant safety rules.

_____ C. Rate the handling of metal chips, scrap, cutting fluids, coolants, and lubricants as regards applicable environmental codes.

_____ D. Rate the facilities compliance with all applicable OSHA, EPA, and industry safety standards.

Reference Documentation _____
_____
_____

2.2 First Aid

_____ A. Rate the availability of medical supplies.

_____ B. Rate the eye and body wash facilities.

Reference Documentation _____
_____
_____

Requirement 2 Facilities *(continued)*

2.3 Tooling and Material Storage

_____ A. Rate the adequacy of the tooling crib and material storage area to support the metalworking training program.

Reference Documentation _____

_____

_____

2.4 Maintenance

_____ A. Rate the effectiveness of the preventive maintenance schedule.

Reference Documentation _____

_____

_____

2.5 Support Facilities

_____ A. Rate the availability of an area separate from the metalworking shop for the instructor's use as an office.

_____ B. Rate the availability of an area convenient to, but separate from, the metalworking shop for theory instruction and other non-shop activity

_____ C. Rate the area provided for after shop activities, or trainee cleanup, in terms of being conveniently located.

_____ D. Rate the restrooms for male and female trainees, in terms of being conveniently located.

_____ E. Rate the lockers for male and female trainees, in terms of being conveniently located.

Reference Documentation _____

_____

2.6 Housekeeping

_____ A. Rate the classroom and shop area for being kept clean and orderly.

Reference Documentation _____

_____

_____

2.7 Facility Evaluation

_____ A. Rate the participation of faculty and the Advisory Committee in making continuous equipment and shop (to include technical and facilities) improvements.

_____ B. Rate the overall visual appearance of the program to visitors and prospective students upon entering the facility. Advisory Committee should use the NIMS Facility Review worksheet for annual reviews.

Reference Documentation _____

_____

_____

Requirement 3 Equipment, Tooling, & Measuring Devices

Applicant programs must provide for access to machine tools and necessary tooling to meet the performance requirements specified in the skill standards. The time, availability, and condition of the machine tools and tooling must be sufficient so as not to be a factor that unduly limits achievement or performance.

3.1 Equipment & Tooling Inventories

A. Rate the availability of machine tools and tooling needed for effective instruction and in allowing trainees to meet the performance requirements of NIMS skill standards.

_____ i) Adequate bench space

_____ ii) Adequate machine time

_____ iii) Adequate tooling for machines and projects

_____ iv) Adequate calibrated measuring devices (In-house calibration: OK)

_____ v) Equipment and tooling in terms of meeting industry quality standards.

Reference Documentation _____

_____

Requirement 3 Equipment, Tooling, & Measuring Devices *(continued)*

3.1 Safety

_____ A. Rate the degree to which all shields, guards, stops, and other safety devices are in place, operable, and used.

_____ B. Rate the equipment and tooling in terms of meeting industry standards.

Reference Documentation _____

_____

_____

3.3 Materials

_____ A. Rate the availability of materials (metal blocks, sheet stock, etc.) to assure continuous instruction.

_____ B. Rate the availability of consumables (fluids, lubricants, etc.) to assure continuous instruction.

Reference Documentation _____

_____

_____

Requirement 4 Program Features & Curriculum

NIMS does not promote or recommend how a training program is designed nor represent curricular materials for adoption. NIMS does expect certain program features to ensure that training is thorough, in accord with industry needs, and provides the opportunity to earn NIMS Credentials.

4.1 Metalworking Industry Advisory Committee

_____ A. Does the Advisory Committee hold at least two (2) working meeting per year, with meeting minutes on file?

_____ B. Does the Advisory Committee have an industry person as co-chair?

_____ C. Does the Advisory Committee membership reflect the diversity of companies in the service area?

Reference Documentation _____

_____

_____

Requirement 4 Program Features & Curriculum *(continued)*

4.1 Metalworking Industry Advisory Committee *(continued)*

_____ D. Rate the extent to which the Advisory Committee is actively involved in evaluating the success of the training program.

_____ E. Rate the input of the Advisory Committee in planning and implementing improvements to the training program.

Reference Documentation _____
_____
_____

4.2 Performance Standards

_____ A. Rate the degree to which the trainee is informed of NIMS performance requirements and credentialing opportunities.

_____ B. Rate the effectiveness of the plan to increase NIMS credentialing among trainees.

Reference Documentation _____
_____
_____

4.3 Instructional Load

_____ A. Rate the instructional staff's schedule in terms of providing adequate time for planning, preparing materials, and evaluating trainee performance.

_____ B. Rate the current trainee-to-instructor ratio in terms of being educationally sound.

Reference Documentation _____
_____
_____

Requirement 4 Program Features & Curriculum *(continued)*

4.4 Curriculum

_____ A. Rate the correspondence between the structure of the program and NIMS credentialing modules.

_____ B. Rate the importance placed on safety instruction as part of the training program.

_____ C. Rate the degree to which safety issues are part of instruction and evaluation of trainee knowledge and performance.

_____ D. Rate the trainees' instruction in awareness of first aid facilities and procedures.

_____ E. Rate the curriculum as to including instruction in:

a) Applicable safety regulations the trainee may encounter on-the-job

b) Legal responsibilities of the metalworking technician regarding applicable environmental regulations

_____ F. Identification and use of appropriate tools and measuring devices

_____ G. Use of machine tool operations manuals.

_____ H. Applicable metalworking theory.

_____ I. Rate the flexibility of the program for accommodating trainees with different levels of cognitive and psychomotor skills

_____ J. Rate the alignment of related mathematics, reading, communications, theory, and use of engineering drawings instruction to the requirements of the skill standard.

_____ K. Rate the extent to which work-based cooperative education components (internships, co-ops, etc.) are incorporated in the program to supplement on-going instruction

_____ L. Rate the degree to which the program instructor and the workplace supervisor have a structured plan for learning activities and evaluating trainee performance in the workplace setting.

_____ M. Rate the degree to which opportunities to share and evaluate trainees workplace experience are incorporated into curriculum plans.

_____ N. Rate the use of skill competitions in the program as an instructional tool.

_____ O. Rate the degree to which trainees are encouraged to participate in third party skill competitions in metalworking.

Requirement 4 Program Features & Curriculum *(continued)*

Reference Documentation for Section 4.4 on previous page:

_____

_____

_____

4.5 Work Habits & Ethics

_____ A. Rate the degree to which the program is organized so that work habits developed in the program are similar to those required on-the-job.

B. Rate the emphasis placed on the following in all instructional training activities:

_____ i) Importance of maintaining good relationships with fellow trainees.

_____ ii) Respect for fellow trainees' tools and other property

_____ iii) Punctuality.

_____ iv) Maintaining a good record of attendance.

_____ v) Learning to follow instructions, especially in machine and tooling usage.

_____ vi) Displaying a concern for accuracy.

_____ vii) Developing time-efficient work habits.

Reference Documentation _____

_____

_____

Self-Evaluation continues on following pages...

Requirement 4 Program Features & Curriculum *(continued)*

4.6 Credentialing Activity

_____ A. Rate the extent to which the required trainee activity data is collected on a regular basis.

B. Report the most recent year's data:

_____ i) Number of trainees enrolled in applicant program

_____ ii) Number of trainees passing NIMS credentialing exams

_____ iii) Number of trainees attempting NIMS credentialing exams

_____ iv) Percentage of trainees placed in metalworking jobs within six (6) months of program completion.

_____ v) Percentage of program completers who continue training

Reference Documentation _____
_____
_____

4.7 Reference Resources

_____ A. Rate the availability of metalworking trade magazines and other current information sources to the program.

_____ B. Rate the extent to which standard workplace reference resources (ex. *Machinery's Handbook*) are used in the instruction program.

Reference Documentation _____
_____
_____

Requirement 4 Program Features & Curriculum *(continued)*

4.8 Promotion, Counseling, & Placement

_____ A. Rate the placement system used to assist trainees in the metalworking program in securing employment upon program completion.

_____ B. Rate the effectiveness of effort to promote careers in metalworking and the value of NIMS credentials to potential trainees and their families.

_____ C. Rate the currency and quality of information regarding career opportunities in metalworking provided to counseling staff in the programs home institution.

_____ D. Rate the degree to which trainees are exposed to the career pathways available in metalworking.

_____ E. Rate the degree to which trainees are informed of metalworking skills most in need in the program's service area.

Reference Documentation _____
_____
_____

4.9 Articulation

A. Rate the successful articulation between the program and further education and training programs, including:

_____ i) Educational Programs

_____ ii) Company-Based Programs

_____ iii) Apprenticeships

_____ iv) Military

Reference Documentation _____
_____
_____

Requirement 4 Program Features & Curriculum *(continued)*

4.10 Instructional Evaluation

_____ A. Rate the use of continuous improvement in the program's instructional delivery.

_____ B. Rate the use of trainee follow-up data in the evaluation process.

_____ C. Rate the use of self-evaluation of instruction in the evaluation process.

Reference Documentation _____
_____
_____

Requirement 5 Administration

Administrative policy and practice must evidence support and promotion of the metalworking program, including adequate financial support to meet and maintain accreditation requirements.

5.1 Administrative Support

_____ A. Rate the participation of the administration in the meetings and activities of the Advisory Committee.

_____ B. Rate the provisions made for metalworking instructors to have industry in-service opportunities.

_____ C. Rate the extent to which the annual budget is prepared by the metalworking instructional staff in cooperation with the institution's administration.

Reference Documentation _____
_____
_____

Requirement 5 Administration *(continued)*

5.2 Safety & Environmental Policies

_____ A. Rate the extent to which written policies regarding safety, liability, and environmental handling procedures have been approved by the administrative or governing board.

_____ B. Rate the extent to which responsibilities of the instructional staff and the institution have been written and approved by the administrative or governing board.

Reference Documentation _____

_____

_____

5.3 Program Administration

_____ A. Rate the extent to which the decision-making chain-of-command is written as regards curriculum processes and acquisition procedures.

Reference Documentation _____

_____

_____

5.4 On-Going Investment

_____ A. Rate the provision for the maintenance and refurbishing of the machine tools used by the program.

_____ B. Rate the provision for maintaining and replacing of tooling.

_____ C. Rate the provision for acquiring new machine tools for the program.

_____ D. Rate the provision for calibrating, maintaining, and replacing measuring devices used by the program.

_____ E. Rate the extent to which the Advisory Committee has input in items B through D above.

_____ F. Does the program have a policy regarding acquisition procedures?

Reference Documentation

_____

_____

Requirement 6 Instructional Staff Qualifications

The instructional staff in the applicant metalworking program must evidence the experience and technical competency appropriate to the proposed metalworking program.

6.1 Technical Competency

_____ A. Is the program seeking accreditation in at least four skills areas for which NIMS provides skill standards?

_____ B. Does the program instructor(s) hold current NIMS credentials in the skills areas for which accreditation is sought?

Reference Documentation _____

_____

_____

6.2 Industry In-Service Experience

_____ A. Rate the willingness of the metalworking instructional staff to participate in industry-based in-service opportunities.

Reference Documentation _____

_____

_____

For any score of 3 or less, please provide a statement on how your program plans to improve in that area, as well as your intentions to implement the improvements.
(Use additional sheet of paper, if necessary)

_____ _____
Signature of Program Liaison Date

_____ _____
Program Liaison Name (printed) Program Liaison Title

After completion of this self-evaluation, please continue to Self-Study Kit Part 5. If both Part 4 (self-evaluation) and Part 5 (accreditation forms) are complete, please send copies of both to NIMS.

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Self-Study Kit for Initial Accreditation

Effective: July 19, 2017

Part 5:

Accreditation Forms

Self-Study Kit: Part 5 — Accreditation Forms

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Accreditation Forms

Application for Initial Accreditation

All required fields are outlined in red.

Institution

Institution Name _____

Metalworking Program Name _____

Address_____

City_____ State_____ Zip_____

Telephone_____ Fax_____

Institution & Department Administrators

Name of Chief Administrator _____

Title of Chief Administrator _____

Name of Department Administrator _____

Title of Department Administrator _____

Department Administrator's Email _____

Point of Contact This is the primary contact between your training program and NIMS.

Name_____ Title_____

Telephone_____ Fax_____

Program Liaison's Email _____

Level of Program Being Evaluated (Select One) Secondary Post-Secondary Other

Date of Establishment of Metalworking Program _____

Number of Full-Time Metalworking Instructors ____ Part-Time Metalworking Instructors ____

Current Student Enrollment _____ Student Enrollment Capacity _____

Metalworking Skills Areas for Accreditation *Reference: Self-Study Kit Part 1, Section 2.2*

Using the NIMS *List of Credentials*, please select a minimum of two credentials that best match your program's training curriculum.

Tips on choosing the right metalworking skills areas for your program:

- When viewing the List of Credentials, note that the left column displays module headings and the right column shows the offered credentials
- If a curriculum focuses on entry-level skills, it is recommended that skills areas be selected from the eleven credentials listed under Machining Level
- If a curriculum does not teach some skills found on the List of Credentials, then your program may skip those areas. (i.e. If a program focuses on CNC skills, then they may select only the CNC credentials and skip the manual credentials)
- NIMS requires that your program select a minimum of two skills areas in addition to the two listed below. Instructors are required to earn the NIMS credential (certification) for each of the metalworking skills areas that you list below.

List the metalworking skills areas that best match your program curriculum:

1. Measurement, Materials & Safety (required by NIMS)
2. Job Planning, Benchwork & Layout (required by NIMS)
3. _____
4. _____

If your program opts to pursue more than four skills areas, list additional skills below. Additional skills areas can be added after accreditation is awarded.

5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

Training Partners *Reference: Self-Study Kit Part 3, Section 1.4*

This is applicable to applicant metalworking programs in which portions of instruction are taught in cooperation with other organizations and/or companies. *Example*: training partners may provide instruction in mathematics, technical writing, or machine-specific skills.

Attach additional sheet, if necessary. Leave blank if training partners are not a component of your program.

Organization/Company_____

Contact Person_____ Title_____

Address_____

City, State, Zip_____

Telephone_____ Fax_____

Email_____

The above organization provides our training program instruction in:

_____

_____

Define the program's service area.

This is the geographical area from which students travel to attend your program. This also includes geographical areas in which your Advisory Committee members are located. *Attach additional sheet, if necessary.*

_____

Nominee for Educator of the On-Site Evaluation Team

Reference: Self-Study Kit Part 3, Section 1.4

As a final step in the accreditation process, NIMS will send a three-person Evaluation Team to conduct a two-day On-Site Evaluation of your training program. The Evaluation Team consists of a Team Leader, an Industry Representative, and an Education Representative. Use the space below to nominate an educator to serve on the Evaluation Team.

Note—Nominees may not be full-time, part-time, or recently retired employees of your training program

Name and Title_____

Institution_____

Telephone_____ Email_____

Required Signatures

It is understood that the applicant program will submit a $1,500 On-Site Evaluation Fee prior to hosting a two-day On-Site Evaluation to complete the accreditation process. All expenses incurred beyond the $1,500 Fee for the On-Site Evaluation will be paid by the applicant program.

Institution's Chief Administrator

Signature_____ Date_____

Name & Title (print or type)_____

Department Administrator

Signature_____ Date_____

Name & Title (print or type)_____

Program Point of Contact

Signature_____ Date_____

Name & Title (print or type)_____

Chairman of Advisory Committee (Must Be From Industry)

Signature_____ Date_____

Name & Title (print or type)_____

Metalworking Instructor Qualifications Sheet

The applicant program is to complete this form on behalf of EACH FACULTY MEMBER. This does not include related academic or related technical faculty. Only faculty members of instruct the skills that are specific to the applicant training program.

Instructor Name_____

Instructor's Email_____

Instructors must hold NIMS Credentials for the metalworking skill that he or she teaches for the applicant
program. Please list all NIMS Credentials earned by this specific metalworking instructor.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Number of years of full-time experience as a metalworking skills trainer: _____

Number of years of full-time experience as a metalworker in industry: _____

Calendar year of most recent experience as a full-time metalworker in industry: _____

Metalworking Instructor Qualifications Sheet

The applicant program is to complete this form on behalf of EACH FACULTY MEMBER. This does not include related academic or related technical faculty. Only faculty members of instruct the skills that are specific to the applicant training program.

Instructor Name_____

Instructor's Email_____

Instructors must hold NIMS Credentials for the metalworking skill that he or she teaches for the applicant
program. Please list all NIMS Credentials earned by this specific metalworking instructor.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Number of years of full-time experience as a metalworking skills trainer: _____

Number of years of full-time experience as a metalworker in industry: _____

Calendar year of most recent experience as a full-time metalworker in industry: _____

Metalworking Instructor Qualifications Sheet

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Instructor Name_____

Instructor's Email_____

Instructors must hold NIMS Credentials for the metalworking skill that he or she teaches for the applicant
program. Please list all NIMS Credentials earned by this specific metalworking instructor.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Number of years of full-time experience as a metalworking skills trainer: _____

Number of years of full-time experience as a metalworker in industry: _____

Calendar year of most recent experience as a full-time metalworker in industry: _____

Metalworking Instructor Qualifications Sheet

The applicant program is to complete this form on behalf of EACH FACULTY MEMBER. This does not include related academic or related technical faculty. Only faculty members of instruct the skills that are specific to the applicant training program.

Instructor Name_____

Instructor's Email_____

Instructors must hold NIMS Credentials for the metalworking skill that he or she teaches for the applicant
program. Please list all NIMS Credentials earned by this specific metalworking instructor.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Number of years of full-time experience as a metalworking skills trainer: _____

Number of years of full-time experience as a metalworker in industry: _____

Calendar year of most recent experience as a full-time metalworker in industry: _____

Advisory Committee List *Reference: Self-Study Kit Part I, Section 4.1*

Please provide names and contact information for all members of your Advisory Committee. Advisory Committees must have participation from a minimum of five different companies in the geographical area served by the applicant program.

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Advisory Committee Members *(continued)*

Please provide contact information for all committee members.

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Advisory Committee Members *(continued)*

Please provide contact information for all committee members.

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Advisory Committee Members *(continued)*

Please provide contact information for all committee members.

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

List of Local Employers for On-Site Evaluation Interviews

Reference: Self-Study Kit Part 3, Section 1.5

Please provide contact for up to ten employers located in the geographical service area of the applicant training program. These employers will be interviewed off-site or by phone during the On-Site Evaluation.

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

List of Local Employers for On-Site Evaluation Interviews *(continued)*

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

List of Local Employers for On-Site Evaluation Interviews *(continued)*

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

List of Local Employers for On-Site Evaluation Interviews *(continued)*

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Name _____

Company _____

Title _____

Phone _____ Email Address _____

Mailing Address _____

City/State/Zip _____

Self-Study Kit for Initial Accreditation

Effective: July 19, 2017

Part 6:

Guide to Credentialing

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National Institute for Metalworking Skills®

Complete Guide to NIMS Credentialing Program

Educational Programs

Revised August 16, 2011

National Institute for Metalworking Skills, Inc. ®
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Fairfax, Virginia 22030
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(703) 352-4991 Fax
support@nims-skills.org

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CONTENTS

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NIMS Credentials

Skills in the metalworking industry are certified through the earning of NIMS credentials. The credentials are awarded on satisfactory completion of both performance tests and related theory exams.

Standards-based Assessments

The assessments are standards based; i.e., they are drawn from the NIMS national metalworking standards. Both performance and theory assessments are developed by the industry and piloted in the industry.

Performance plus Knowledge Examinations

NIMS certifications require both performance and theory exams. The performance will be the manufacturing of a part, the set-up and operation of a machine or the writing of a program that will manufacture a specific part.

Multiple Credentials

The NIMS standards are modular, thus permitting credentials based on specific metalworking process and levels of competency. For example, there are 11 distinct credentials in Machining Level I. Overall, there are 52 NIMS credentials. The credentials enable the employer to assess candidates in those skills most applicable the firm's needs and enable training institutions to measure program performance tailored to industry's needs.

Advantages to Companies

Metalworking companies use the credentials for recruiting, hiring, placement and promotion. The guesswork is removed from the human resource process. Companies can advertise for specific NIMS credentialed skills, preferring or requiring certain credentials. For example, a North Carolina company requires two NIMS Level I machining programs from all candidates. A Missouri company bases raises on NIMS credentials.

Basis for Apprenticeship Training

The NIMS credentials serve as progress assessments in the industry's exciting, new Competency-Bases Apprenticeship System. The credentials demonstrate the earned competencies required in the new system.

Advantages to Education and Training Programs

Educational institutions use NIMS credentials as performance measures and as the basis for articulation. For example, Pennsylvania requires all machining students to test for NIMS. U.S. Army machinist trainees earn NIMS credentials. The Robert C. Byrd Institute requires NIMS credentials for the earning of the Associate Degree in Manufacturing Technology. An ever-growing number of colleges and universities award credits to high school students and to company employees for NIMS credentials.

Advantages to the Workers, Trainees and Students

The candidates know clearly what is expected of them, whether it is for graduation, hiring or advancement. The NIMS credential clearly demonstrates that the credential holder met the industry benchmark for that competency.

Where and How

The company or training institution needs no prior relationship with NIMS for its employees or trainees to earn credentials. The credentials can be earned literally anywhere.

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SECTION 2

NIMS Credentials

The NIMS Credentials certify an individual's skills as measured against the NIMS Standards. Earning NIMS credentials requires a performance test and a theory test. The performance requirements and theory tests are drawn directly from the NIMS Standards, and are written and piloted by industry. NIMS currently offers 52 metalworking credentials.

Machining Level I *Designed to meet entry-level requirements for on-the-job skills*	Measurement, Materials & Safety Job Planning, Benchwork & Layout Manual Milling Skills I Turning Operations: Turning Between Centers Turning Operations: Turning Chucking Skills Grinding Skills I Drill Press Skills I CNC Turning: Programming Setup & Operations CNC Milling: Programming Setup & Operations CNC Turning: Operations CNC Milling: Operations
Machining Level II *Designed to meet journey-level requirements for on-the-job skills*	Manual Milling Skills II Turning II (manual) Drill Press Skills II Grinding Skills II CNC Milling Skills II CNC Turning Skills II EDM — Wire EDM — Plunge
Machining Level III *Designed to meet master-level requirements for on-the-job skills*	CNC Turning Skills III CNC Milling Skills III
Metalforming Level I	Metalforming Level I
Stamping Level II	Operate with Single Hit Tooling II Operate with Compound Dies II Operate with Progressive Dies II Operate with Deep Draw Dies II Operate with Transfer Dies II
Stamping Level III	Parts Inspection & Quality Control Setup with Single Hit Tooling III Setup with Compound Dies III Setup with Progressive Dies III Setup with Deep Draw Dies III Setup with Transfer Dies III

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NIMS Credentials (page two)

Press Brake Level II	Operate Non-CNC Drive Press Brake Skills II CNC Punch (Turret) Press Level II
Press Brake Level III	Setup and Operate Non-CNC Mechanical III Setup and Operate CNC Drive III
Slide Forming Level II	Slide Forming Operations II
Slide Forming Level III	Slide Forming Setup & Operation II
Screw Machining Level II	Operate with Single Spindles II Operate with Multiple Spindles II
Screw Machining Level III	Setup & Operate with Single Spindles II Setup & Operate with Multiple Spindles III
Machine Building Level II	Machine Building Level II Mechanical Assembly
Machine Building Level III	Machine Building Level III Mechanical Assembly
Machine Maintenance, Service & Repair Level II	Preventive Maintenance
Machine Maintenance, Service & Repair Level III	Machine Service & Repair Machine Repair/Rebuilding
Diemaking Level II	Diemaking Level II
Diemaking Level III	Diemaking Level III

For use in certifying training staff to train personnel to achieve all NIMS standards:	
	OJT Trainer
	OJT Senior Trainer
	OJT Training Coordinator

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Roles Involved in the NIMS Credentialing Program

SECTION 3

1. ***Primary Organization Contact—***

The organization contact is the main contact person between your training program and NIMS. For training programs at educational organizations, this is usually a lead instructor, department head/chair, principal or career-tech director. For industry training programs this is usually the manager of HR or in-house training.

Contact NIMS Staff to register yourself or a colleague as Primary Organization Contact:
Phone: (703) 352-4971 Email: support@nims-skills.org

2. ***Sponsor—***

A sponsor is the person who oversees students/trainees while enrolled in your training program. At educational organizations, sponsors are typically instructors. At industry training programs, this is usually the person who delivers the on-the-job training. ***Sponsors are not required to earn any NIMS credentials before allowing students/trainees to do the same.***

Sponsor responsibilities:

-Supervise students/trainees throughout the Performance Exam, which is a requirement for every NIMS credential except Measurement, Materials & Safety.

-Enter information into the Performance Affidavit (see Section 7) for each student/trainee that successfully finishes a Performance Exam.

-Coordinate with inspectors on your MET-TEC Committee to have each student/trainee's part inspected against the print issued by NIMS. Parts are made during the Performance Exam.

-If a student/trainee's part passes inspection within 100% tolerance, the sponsor will fax or email a Performance Affidavit to NIMS. If a part does not pass inspection, it is up to the discretion of the sponsor on allowing a second or third attempt at machining the part.

Please note- Sponsors may inspect both parts required for the Job Planning, Benchwork & Layout Performance Exam. For this credential only, a MET-TEC is not necessary.

Sponsors must register before students/trainees register as candidates.
To do so, simply have your Primary Organization Contact log in to the NIMS website, then click "Add a Sponsor" on the left-hand menu. You can always contact NIMS Staff for assistance by calling (703) 352-4971 or by emailing support@nims-skills.org.

3. ***Candidate—***

Students/Trainees must be registered as a candidate no less than 24 hours before taking any NIMS Theory Exam through the Online Testing Center**.** To register:

1. Go to www.nims-skills.org and click **Candidate Registration** on the left.
2. Choose your school and sponsor from the drop-down lists, then complete the contact form to reflect the name and home address of a given student/trainee. *For phone number* you may the student or school phone number. *For email address*, you may enter the student's email address or the email address of his or her sponsor. ***Following registration, this email address will receive an message containing a username and password for that student.***
3. Click **submit**. The next page will request payment of a $40 registration fee. This can be paid on-screen by entering credit card information or a pre-arranged account code. *Contact NIMS Staff for more information on pre-arranged account codes.*

More…

4. Proctor –

To ensure that all Online Theory Exams are taken in a fair environment free from cheating and distractions, NIMS requires that a registered exam proctor be present anytime an individual takes an Online Theory Exam—this includes sponsor and candidate testing.

The proctor is any employee of integrity, however **sponsors may not proctor their own candidates' online exams.**

Proctors must register online for free at www.nims-skills.org. The registration form has a space for "Proctor Code." This is a secret code created by the proctor and is needed for any student to begin an exam.

Proctor duties:

- Be present for the duration of Online Theory Exam testing.
- Verify candidates by checking IDs before beginning exams.
- Instruct candidates to go to www.nims-skills.org and log in using the username and password that were issued at the time of Candidate Registration (see previous page).
- Ensure that candidates purchase the correct Online Theory Exam. On-screen payments are accepted by credit card or by pre-arranged account code. *For more information on pre-arranged account codes, please contact NIMS Staff at (703) 352-4971 or at support@nims-skills.org.*
- Allow no talking during the exam.
- Allow only the following NIMS-approved items during testing:
  - Calculator
  - Pencil and paper
  - Machinery's Handbook or Student's Shop Reference Handbook
- Enter a proctor code, which the proctor establishes at the time of registration. By entering this code, the candidate is officially cleared to being the Online Theory Exam.

It is imperative that proctors keep their proctor codes completely confidential. Proctor Codes may not be shared with candidates or sponsors. If a proctor is unavailable when candidates need to test, your organization may register another employee as proctor (at no charge).

5. MET-TEC Committee – A.K.A. – The Metalworking Technical Evaluation Committee

This is a group of volunteers from local metalworking companies, who are responsible for inspecting the parts made by candidates during the Performance Exam. Committee members can be from any local Companies, regardless of never having worked with NIMS in the past. Inspections can take place at your facility or at the facility of the inspectors, as long as sufficient measuring tools are present.

Please note — Industry training programs whose company has a quality certification are exempt from assembling a MET-TEC Committee. These programs may use their in-house inspection department to inspect parts created during the performance exam against the NIMS-provided print.

For more information on MET-TEC Committees and their members, please see the "Guide to Establishing a MET-TEC Committee" – found on the Resources page of the NIMS website and in this booklet.

If your organization contact(s), sponsor(s), or candidate(s) cannot recall a username or password to log in to the NIMS website, feel free to contact NIMS staff at (703) 352-4971 or by email at support@nims-skills.org. Please note that NIMS staff is available Monday through Friday, 9am until 5pm Eastern Time.

If your proctor(s) cannot recall a proctor code, he or she must call NIMS at (703) 352-4971. Proctor codes will not be provided by email. Students and instructors will not be given proctor codes under any circumstances.

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Credentialing Process: Testing Your Students/Trainees

SECTION 4

STEP ONE— CANDIDATE REGISTRATION

- Candidate registration is completed on the NIMS website and requires a $40 registration fee per person
- Registration is good for life, so the $40 fee is assessed only once per person.
- Only individuals seeking NIMS credentials are required to register.
- Students/trainees may complete the NIMS Performance Exam prior to registering, however registration must be completed prior to taking an Online Theory Exam.
- Registration may be completed by the student/trainee or on his behalf by a sponsor or other employee

Registering a student/trainee as a candidate:

1. Go to www.nims-skills.org and click **Candidate Registration** on the menu to the left.
2. Select your organization and the student/trainee's sponsor from the first two drop-down lists.
3. Complete the rest of the form to reflect the student/trainee's home address and contact information. If this information is unavailable at the time of registration, simply enter the address and phone for the school or company where training occurs.
4. Enter a valid email address in the last box of the form. NIMS Staff will send two messages to this email address to confirm this registration, so please enter a valid address. Sponsors may enter their own email address in this box. The two emails will arrive within 24 hours of registration and they are:
    a. A receipt for payment of the $40 registration fee.
    b. A candidate username and temporary password. The student/trainee will use these to log into the NIMS Online Testing Center at www.nims-skills.org, where he will take Online Theory Exams.

Troubleshooting:

- *Completing candidate registration for two or more students/trainees?*

  You can pre-pay by first calculating your total cost in registration fees and then simply sending payment (check, purchase order, or credit card) to NIMS prior to the date you plan to register students/trainees as candidates. In exchange, NIMS staff will put your funds into an account that you will draw on by entering a 4-digit account code anytime the system requests payment for the $40 fee.

- *Using an account code to pay registration fees, but the system says my account code has insufficient funds. What happened?*

  If you receive this message, please contact NIMS Staff at (703) 352-4971 or at support@nims-skills.org to check the balance of your account code and verify the transactions that have occurred. This is often result of a student/trainee being registered more than once, which means the system charged the $40 fee to your account code more than once.

- *Sponsor is missing from the drop-down list on the candidate registration form?*
  No problem! Simply contact NIMS Staff at (703) 352-4971 or at support@nims-skills.org and tell them you would like to "add a new sponsor" to your organization's account.

- *Candidate is registered, but forgot his username and/or password. How are they retrieved?*

  *No problem! Simply go to www.nims-skills.org and click the **Forgot My Password** link on the left. From there, simply enter the candidate's username, complete the text verification, and click **Retrieve Password**. This will enable the system to send an email to the email address listed on the candidate's profile. If you do not see that email, are unable to access your email, or if you need a username, please contact NIMS Staff at (703) 352-4971 or at support@nims-skills.org.*

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STEP TWO— CANDIDATES COMPLETE A PERFORMANCE EXAM

- Performance Exams are required for all NIMS Credentials—except Measurement, Materials & Safety (MMS). If your candidates are seeking the MMS credential, you may skip to step three.
- Most Machining Level I and II Performance Exams require the candidate machining a part based on a NIMS-provided print. Part prints are found on the Resources page online or on the NIMS Tools & Documents CD.
- Some Machining Level I, II, and II Performance Exams require the candidate to complete a Credentialing Achievement Record (CAR). This is a comprehensive checklist of skills and is to be completed under sponsor supervision. CARs are found on the Resources page online or on the NIMS Tools & Documents CD.
- All other NIMS Credentials require a CAR as a Performance Exam. This includes: Metalforming Level I; Stamping Level II and III; Press Brake Level II and III; Slide Forming Level II and III; Screw Machining Level II and III; Machine Building Level II and III; Machine Maintenance, Service & Repair Level II and III; and Diemaking Level II and III.
- Level I Performance Exams do not have a time limit, however most Level II and III Performance Exams do have a time limit, which can be found in the Performance Guide to Machining Level II or in the CAR.

Candidates complete a Performance Exam:

1. Sponsors should distribute part print or CAR to candidates prior to starting the Performance Exam.
2. Candidates are to complete the Performance Exam under the supervision of a NIMS-registered sponsor.

Once a candidate completes his part—

- If a candidate completed the two parts required for the Job Planning, Benchwork & Layout credential, then the sponsor may inspect both. If the parts are within 100% tolerance of the prints, the sponsor will then complete the top and middle portion of the Performance Affidavit and then fax or email that affidavit to NIMS staff at (703) 352-4991 or by email at support@nims-skills.org.
- If a candidate completed a part for any other machining credential, the sponsor is to complete the top and middle portion of the Performance Affidavit for that specific candidate, then make arrangements with his MET-TEC Committee to have that part inspected. For more information on MET-TEC Committees, see Section 6 of this booklet. If a part passes inspection by no less than two members of a MET-TEC Committee, then both inspectors should complete the bottom portion of the affidavit. Next, please fax or email that affidavit to NIMS staff at (703) 352-4991 or by email at support@nims-skills.org.
- Submitting affidavits alerts NIMS staff that the candidate has completed and passed the Performance Exam. At this point a staff member will make the corresponding Online Theory Exam available.

Once a candidate completes a CAR—

- The sponsor is to complete the Affidavit of Successful Completion, which is found at the end of the CAR booklet, and then fax or email that affidavit to NIMS staff at (703) 352-4991 or by email at support@nims-skills.org.
- Submitting affidavits alerts NIMS staff that the candidate has completed and passed the Performance Exam. At this point a staff member will make the corresponding Online Theory Exam available.

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STEP THREE— CANDIDATES TAKE AN ONLINE THEORY EXAM

- The last step to earning any NIMS Credential is to take the Online Theory Exam while under proctor supervision. For information on selecting and registering a proctor, please see Section 3 of this booklet.
- Sponsors are to work with their proctor to select a time and place for candidates to test online.
- Several study guides and sample tests are available to candidates. Simply go to www.nims-skills.org and go to the Resources page to see the available guides and tests.
- Online Theory Exams are priced at $35 for Level I credentials and at $50 for Level II and III credentials. Training Programs that are accredited by NIMS receive a 20% discount, making fees $28 and $40 respectively.
- Each Online Theory Exam must be completed within 90 minutes. A time counter is located in the top-right corner of the screen once the exam is started.
- A pass or fail grade is displayed on-screen after submitting answers for scoring. If the candidate passed, NIMS staff is alerted and an official certificate will be mailed to the address listed on the candidate's profile. If the candidate failed, he may re-take the exam any time. The exam fee will be re-assessed for each re-take.
- If a power outage, computer failure, or any other issue arises that results in a pause in testing, the Online Testing Center will save the candidate's progress and the time that has lapsed. To continue an exam, the candidate will simply log in, click **Take Test**, have his proctor enter a proctor code, and continue where he left off

Candidates take an Online Theory Exam:

1. Once the sponsor and proctor have arranged a time and place for candidates to test (under proctor supervision), the proctor will ensure that one computer is available per candidate.
2. Candidates will then go to and log in with the username and password that were assigned following registration. If a candidate cannot recall a username or password, please see the bottom of page one of this section.
3. Have candidates click the **Skip** button on the **Edit Profile** page to go to the **Welcome Screen**.
4. Have candidates click **Purchase Test** on the menu to the left, then click the **Order** box for the particular exam they are planning to take. Next click **Add to Cart**.
5. Provide payment for the exam by typing in credit card information or by typing in a pre-arranged account code. Click **Submit Payment**. *Accredited Programs: Your discounted exam fee will be reflected on the next page.*
6. On the **Order Confirmation** page, scroll to the bottom and click **Done**.
7. The next page will show all exams that have been purchased for this candidate. Click the **Take Test** button next to the particular test that is being taken today.
8. The page will shift down and the **Test ID** has been automatically copied into the corresponding box. At this point the proctor will enter a proctor code into the second box and then click **Start Test**.

   It is imperative that the proctor personally enter his or her proctor code. These codes must be kept absolutely and may not be shared with other faculty, staff, or students/trainees. Failure to abide by this confidentiality will result in revoked proctor privileges and other penalties.
9. From here the candidate can simply follow the on-screen prompts and begin the Online Theory Exam.

Questions?
Trouble navigating the Testing Center?
Not seeing the exam your candidate is prepared to take?

Please contact NIMS Staff at (703) 352-4971 or by email at support@nims-skills.org.

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National Institute for Metalworking Skills®

NIMS Credentialing Process: Testing Your Instructors/Trainers

STEP ONE— INSTRUCTORS/TRAINERS AS CANDIDATES

Before instructors/trainer can personally earn NIMS Credentials, you will want to contact NIMS to be sure they have been registered as candidates. To do so, simply call NIMS at (703) 352-4971. Be sure to ask if " _____ is registered as a candidate so that he may personally test for NIMS certifications." You may also request this information from NIMS staff by emailing support@nims-skills.org.

STEP TWO— INSTRUCTORS/TRAINERS COMPLETE PERFORMANCE EXAMS

Just like students/trainees, instructors/trainers are required to successfully complete a Performance Exam before he is eligible to take the corresponding Online Theory Exam.

- Performance Exams are required for all NIMS Credentials—except Measurement, Materials & Safety (MMS). If an instructor is seeking the MMS credential, you may skip to step three.
- Most Machining Level I and II Performance Exams require the instructor/trainer to machining a part based on a NIMS part print. Part prints are found on the Resources page online or on the NIMS Tools & Documents CD.
- All other NIMS Performance Exams require a Credentialing Achievement Record (CAR) instead of simply machining a part. A CAR is a comprehensive checklist of skills and is to be completed under supervision. CARs are found on the Resources page online or on the NIMS Tools & Documents CD.
- Level I Performance Exams do not have a time limit, however many Level II and III Performance Exams do. Time limits can be found in the Performance Guide to Machining Level II or in the CAR for that credential.

Once an instructor/trainer completes his part—

- If an instructor/trainer completed the two parts required for the Job Planning, Benchwork & Layout credential, then another instructor/trainer may inspect his parts. If his parts are within 100% tolerance of the prints, the instructor/trainer will complete the top portion of the Performance Affidavit and have the inspecting instructor/trainer complete the middle section. Please fax or email that affidavit to NIMS staff at (703) 352-4991 or by email at support@nims-skills.org.
- If an instructor/trainer completed a part for any other machining credential, then he is to complete the top of the Performance Affidavit, have his supervisor sign the middle portion of the Performance Affidavit, and then make arrangements with his MET-TEC Committee to have that part inspected. *For more information on MET-TEC Committees, see Section 6 of this booklet.* If a part passes inspection by two members of a MET-TEC Committee, then both inspectors should complete the bottom portion of the affidavit. Please fax or email that affidavit to NIMS at (703) 352-4991 or at support@nims-skills.org.
- Submitting affidavits alerts NIMS staff that the instructor/trainer has completed and passed a Performance Exam and at this point NIMS staff will make the corresponding Online Theory Exam available.

Once an instructor/trainer completes a CAR—

- The sponsor (instructor/trainee's supervisor) is to complete the Affidavit of Successful Completion, which is found at the end of the CAR booklet, and then fax or email that affidavit to NIMS staff at (703) 352-4991 or by email at support@nims-skills.org.
- Submitting affidavits alerts NIMS staff that the instructor/trainer has completed and passed the Performance Exam. At this point a staff member will make the corresponding Online Theory Exam available.

More —>

STEP THREE— INSTRUCTORS/TRAINERS TAKE ONLINE THEORY EXAMS

1. Work with your proctor (see section three of this book) to arrange a date and time for your instructor/trainer to take the Online Theory Exam, which is the paper exam counterpart to the Performance Exam he has already completed.

2. At the time of testing, your instructor/trainer may have only the following items:

   Pencil and paper / Calculator / Machinery's Handbook *or* Student's Shop Reference Handbook

3. To start the test, have the instructor/trainer go to www.nims-skills.org and log in using his username and password that were assigned at the time of registration. If an instructor/trainer is unsure of his username or password, simply contact NIMS staff at (703) 352-4971 or by email at support@nims-skills.org during business hours (Monday—Friday 9am—5pm Eastern).

4. On the page that opens click the **Change Role** button in the top-right corner and select **Candidate**. If the **Change Role** button is not in the top-right corner, simply click the **SKIP>>>** in the bottom-right corner. This takes you to the **Welcome** screen.

5. From the **Welcome** screen, click **Purchase Test** on the left. On the purchase page, click the box next to the appropriate test, then click **Add to Cart**.

6. On the payment page, scroll to the bottom and click the button next to the words **Use Account Code** then enter the fee-waiving account code that was assigned to you by NIMS staff. Click **submit payment**. If you do not have a fee-waiving account code, please contact NIMS staff and request "an account code for instructor/trainer testing online."

7. Click **Take Test** on the left menu, then click the gray **Take Test** button located next to the appropriate test.

8. The screen will shift down, where a **Proctor Code** box will be highlighted. At this time your proctor will personally type in his or her **proctor code**. It is imperative that proctors type in their codes. Proctors are prohibited from sharing their proctor codes with instructors and students. Proctors who do share their codes will have their proctoring privileges revoked and codes set as expired/invalid.

9. From here, simply follow the on-screen instructions. You will be notified of your results on-screen immediately follow the exam. If you passed, an alert will automatically be sent to NIMS staff, who will prepare and mail your certificate.

PLEASE NOTE: FEE-WAIVING ACCOUNT CODES ARE FOR INSTRUCTOR/TRAINER ONLINE THEORY EXAM FEES ONLY.

Some Tips for Online Theory Exams…

-Each online exam has a 90 minute limit. A time counter is on-screen to give students a countdown.

-If testing must be stopped (or if a power failure occurs), the system will save all answers and the countdown time at which testing was interrupted. To resume testing, the instructor should log in and complete steps 3 and 4 above. Once logged in and on the **Welcome** screen, simply click **Take Test** and have the **Proctor** re-enter his or her code.

-A pass or fail grade will be displayed on-screen after scoring. If a passing grade is received, NIMS is automatically alerted to send an official certificate will be mailed within one week.

-Instructors may print temporary certificates. While logged in, simply go to the "My Credentials" page and click the printer icon under the column "Print Temporary Certificate."

Questions? Trouble navigating the Online Testing Center?

Please contact NIMS staff at (703) 352-4971 or by email at support@nims-skills.org

Establishing a

MET-TEC

Metalworking-Technical Committee

SECTION 6

National Institute for Metalworking Skills, Inc.
10565 Fairfax Boulevard, Suite 203
Fairfax, VA 22030
(703) 352-4971 Phone
(703) 352-4991 Fax
www.nims-skills.org
support@nims-skills.org

July 29, 2004

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Establishing a MET-TEC (Metalworking Evaluation) Committee

for Machining Level I and II

Purpose

A Metalworking Technical Evaluation Committee (MET-TEC) is a committee of voluntary representatives from a local area's metalworking companies. A MET-TEC serves as an agent for NIMS to fulfill the quality review requirement of the performance evaluation of candidates seeking NIMS credentials. A MET-TEC plays a *very key role* in promoting the training and documenting of worker and student skills to industry standards.

A MET-TEC evaluation is conducted to validate that a part made by a candidate to prints approved by NIMS meets all specifications with allowable tolerances. A positive evaluation of a part establishes a candidate's eligibility to take the required Related Theory Examination for the credential being sought.

Composition

A MET-TEC should have a minimum of three (3) members from the metalworking companies in the local or jurisdictional area. Members come from metalworking companies and should consist of managers, supervisors, metalworkers, and/or quality control personnel. Each MET- TEC member should have five (5) years experience or a journey person's certificate in the metalworking industry. The geographic jurisdiction of a MET-TEC is not prescribed by NIMS, but an appropriate jurisdiction should exist, such as that related to the service area of participating schools, whether secondary or post-secondary, public or private.

Each MET-TEC will select its own chairperson whose responsibility will be to assure that the evaluation procedures are conducted in a timely and fair manner. Having alternate MET-TEC members is advised, filling in for members who cannot participate in a timely manner, or due to possible conflicts of interest.

Training programs participating in the NIMS Credentialing Program may establish their own MET-TECs, which can consist of companies in their area and/or companies on their advisory committee.

Registration

A MET-TEC must register with NIMS, reporting participating members and the companies they represent as well as a description of the geographic area to be served. *There are no registration fees.*

Sponsor's Role with the local MET-TEC

The sponsor will be responsible for organizing the parts and part prints when they are ready for MET-TEC review. The sponsor will also schedule the review of parts with the MET- TEC members. Once the MET-TEC members have reviewed the parts, the sponsor will then need to collect the part and signed Performance Affidavits. NIMS should receive successful Performance Affidavits only. Parts may then be returned to the credentialing applicants.

Operational Procedures and Issues

The MET-TEC must determine how and what instruments to use to evaluate submitted parts. NIMS provides options, but does not specify the measuring instruments a MET-TEC must use, as the availability of instruments may vary by locale and company.

NIMS requires that a MET-TEC panel of three (3) be prepared to evaluate each candidate's part. If two (2) MET-TEC members evaluate a part and agree, the third MET-TEC member's review is not necessary.

The candidate's sponsor is responsible for submitting a copy of the print used by the candidate in making a part to qualify for a NIMS Credential. Evaluation instructions for the MET-TEC can be found in the Performance Guides. Performance Guides may be downloaded from www.nims-skills.org.

Reporting Procedures

Once a MET-TEC has completed its review of a part, the Performance Affidavit should be completed and signed. Be sure to check that each participating MET-TEC member has signed the Performance Affidavit. Once completed and signed, the Performance Affidavit and the part bearing the stamp mark from the MET-TEC should be returned to the sponsor.

The sponsor is encouraged to check with the MET-TEC chairperson to insure a timely evaluation of the candidate's part(s).

Which NIMS Performance Exams Require a MET-TEC Committee Evaluation?

Machining Level One:

- Milling I
- Drill Press I
- Grinding I
- Turning Operations: Turning Between Centers
- Turning Operations: Chucking Skills
- CNC Turning—Programming Setup & Operations
- CNC Milling—Programming Setup & Operations

Machining Level Two:

- Milling II
- Turning II
- Drill Press II
- Grinding II

Machining Performance Affidavit

NIMS Credentialing Program

National Institute for Metalworking Skills, Inc.

Applicant

Name _____ Email _____

Address of Applicant _____ City _____ State _____ Zip _____

Machining Level I: (Check Only One **)

- ☐ Benchwork * and Layout *
- ☐ Turning – Chucking
- ☐ Turning – Between Centers
- ☐ CNC Milling – Setup/Prog.
- ☐ CNC Turning – Setup/Prog
- ☐ Drill Press
- ☐ Grinding
- ☐ Milling

Machining Level II: (Check Only One **)

- ☐ Manual Milling
- ☐ Manual Turning – Chucking
- ☐ Manual Turning – Between Centers
- ☐ Manual Drill Press
- ☐ CNC Milling
- ☐ CNC Turning
- ☐ Cylindrical Grinding
- ☐ Surface Grinding
- ☐ EDM – Plunge EDM
- ☐ EDM – 2-Axis Wire EDM

* Does not require MET-TEC review – Sponsor should review the project and complete the Affidavit of Sponsor only.
** Separate Performance Affidavits are required for each credential

Sponsor

Affidavit of Sponsor. Sponsor: Complete this portion and send to the MET-TEC along with the part and part print.

I hereby attest that the above named applicant did perform the requirements being evaluated, that my inspection leads to the conclusion that the applicant's project meets the published NIMS specifications and requirements for the indicated activity, and that the applicant understood and practiced appropriate safety procedures in the conduct of his//her performance.

For Machining Level II Parts: Credentialing applicant must complete part in the allotted time.

Time to complete part: _____ ❒ Pass ❒ Fail

_____ _____ _____

Sponsor's Signature | Sponsor's Company / Organization | Evaluation Date

MET-TEC

Affidavit of Local Metalworking Technical Evaluation Committee

We hereby attest that we have individually inspected the part presented by the above named candidate and record the following evaluation. The evaluation will be measured with a pass or fail grade where "Pass" means that all specifications have been met and are within allowable tolerances and "Fail" means that one or more specification have not been met or are outside of allowable tolerances. Candidate must receive a passing score from at least two inspectors for submission.

Name _____ Company _____ Pass ❒ Fail ❒

Signature _____ Date _____

Name _____ Company _____ Pass ❒ Fail ❒

Signature _____ Date _____

Name _____ Company _____ Pass ❒ Fail ❒

Signature _____ Date _____

MET-TEC – Return the original Performance Affidavit, part, part print, and Evaluation Sheet to the sponsor of this applicant. Stamp passing parts with a letter stamp on critical surface to prevent re-submission. Retain a copy of the Performance Affidavit for your records.

Sponsor send or fax Performance Affidavit to:
National Institute for Metalworking Skills
10565 Fairfax Blvd., Suite 203
Fairfax, VA 22030
Fax: (703) 352-4991

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National Institute for Metalworking Skills®

Credentialing Checklist

Be sure the following steps are completed before students/trainees attempt to take online exams:

- ☐ Has your program has completed the **Organization Registration** at www.nims-skills.org?
  *To check, go to www.nims-skills.org and click **Candidate Registration** on the left. If your school does not appear on the list of organizations then go back to the home screen, click **Organization Registration** on the left, and complete that registration form for free.*

- ☐ Do you have at least one instructor/trainer registered as a sponsors?
  *To check, go to www.nims-skills.org and log in using the username and password that were created as a result of completing the **Organization Registration**. Once logged in and on the **Welcome** screen, click **Manage Sponsors** to the left. All registered sponsors will appear on this list. If the sponsor you are seeking is not on this list, please click **Add a Sponsor** on the left and complete the registration form.*

- ☐ Have students/trainees registered as candidates at www.nims-skills.org?
  *To check, your students/trainees should have usernames and passwords. Students/trainees cannot take **Online Theory Exams** without usernames and passwords, which are created as a result of completing the **Candidate Registration** form for each person planning to test. If you are unsure, please contact NIMS staff at (703) 352-4971 or by email at support@nims-skills.org.*

- ☐ Your students/trainees have successfully completed a **Performance Exam** and a **Performance Affidavit** for each student/trainee who passed the **Performance Exam** has been faxed to NIMS.
  *To check, contact NIMS to see if **Performance Affidavits** were received. Call (703) 352-4971 or email support@nims-skills.org.*

- ☐ Your school has a **Proctor** who has registered with NIMS by completing the **Proctor Registration** form at www.nims-skills.org.
  *To check, have your **Proctor** personally contact NIMS by phone at (703) 352-4971. Staff can also look up **Proctor Codes** this way.*

- ☐ Students/trainees or **Proctor(s)** are aware of how **Online Theory Exam** fees are to be paid.
  To check, contact NIMS by calling (703) 352-4971 or email support@nims-skills.org.

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Effective: July 19, 2017

Part 7:

Performance Guide for Machining Level I

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The National Institute for Metalworking Skills, Inc.

Performance Guide

NIMS Credentialing Program

Machining Level I

10565 Fairfax Boulevard, Suite 203
Fairfax, VA 22030
Tel: (703) 352-4971 | FAX (703) 352-4991
www.nims-skills.org

Issued: August 2005

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Machining Level I Table of Contents

General Instructions – Please Review Carefully

1. This section presents the specific requirements and evaluation criteria a candidate must satisfy to qualify for a NIMS skill credential. You as the candidate's sponsor or trainer have the responsibility to review the candidate's work, assessing it against the requirements as detailed for the specific credentials in this section prior to MET-TEC submission. The instructions and worksheets in this section should be followed closely in fulfilling your training and evaluative role. **It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee.**

2. Each skill credential offered by NIMS is based on a set of duties, which collectively approximate a complete role or job. The separate duties for Machining – Level I can be found in the ***Duties and Standards for Machining Skills – Level I.*** The complete standards chart is available to download at

http://www.nims-skills.org/downloads/downloads.htm.

3. There is only one project for the candidate to complete for each skill area designated in this Evaluators Guide. Some skill areas encompass two or more performance requirements.

4. Upon completion of a part by a candidate, measure and check the part against all specifications, using the corresponding Performance Assessment Worksheet included for the part in the section. If all specifications have been met within the allowable tolerances, then complete the Sponsor/Trainer portion of the Performance Affidavit and arrange for the part to be validated by a MET-TEC. If all of the specifications have not been met, then the candidate must make appropriate corrections or repeat the job.

NIMS standards require 100% conformance to all specifications.

5. The credentialing candidate's sponsor should ensure that each candidate has a copy of the part print he or she is following to meet a NIMS performance requirement.

Machining Performance Affidavit

NIMS Credentialing Program

National Institute for Metalworking Skills®

Candidate

Name _____ Email _____

Home Address _____ City _____ State _____ Zip _____

Machining Level I*
(Select only one)

- ☐ Job Planning, Benchwork & Layout^
- ☐ Turning—Chucking
- ☐ Turning—Between Centers
- ☐ Drill Press Skills
- ☐ Grinding Skills
- ☐ Milling I (Manual)
- ☐ CNC Milling—Prog. Setup & Oper.
- ☐ CNC Turning—Prog. Setup & Oper.

Machining Level II*
(select only one)

- ☐ Milling II
- ☐ Turning II—Chucking
- ☐ Turning II—Between Centers
- ☐ Drill Press II
- ☐ CNC Milling II
- ☐ CNC Turning II
- ☐ Grinding II—Cylindrical
- ☐ Grinding II—Surface
- ☐ EDM II—Conventional / Plunge EDM
- ☐ EDM II—2-Axis Wire EDM

*If pursuing multiple machining credentials, use one affidavit per credential.

^Does not require a MET-TEC part inspection. Sponsors may inspect parts and complete the Affidavit of Sponsor (below) only.

Sponsor

Affidavit of Sponsor Sponsor Instructions: Complete this portion, and send to the MET-TEC along with the part and print.

I hereby attest that the above named candidate did perform the requirements being evaluated, that my inspection leads to the conclusion that the candidate's project meets the published NIMS Specifications and requirements for the indicated activity, and that the candidate understood and practiced appropriate safety procedures in the conduct of his/her performance.

For Machining Level II Parts ONLY: Candidate must complete part in the allotted time. Time to complete part _____

☐ Pass ☐ Fail

_____

Sponsor's Signature Sponsor's Organization/Company Date

MET-TEC Committee

Affidavit of Metalworking Technical (MET-TEC) Committee

We hereby attest that we have individually inspected the part presented by the above named candidate and record the following evaluation. The evaluation will be measured with a pass or fail grade, where "Pass" means that all specifications have been met and are within allowable tolerances, and where "Fail" means that one or more specification has not been met or is outside of allowable tolerances. Candidates must receive a passing score from no less than two MET-TEC inspectors.

Name _____ Company _____ ☐ Pass ☐ Fail

Signature _____ Date _____

Name _____ Company _____ ☐ Pass ☐ Fail

Signature _____ Date _____

Name _____ Company _____ ☐ Pass ☐ Fail

Signature _____ Date _____

Post-Inspection Instructions for MET-TEC— Return this Performance Affidavit, part, print, and evaluation sheet to the sponsor. Stamp passing parts with a letter stamp on critical surface to prevent re-submission. Retain a copy of this affidavit.

Post-Inspection Instructions for Sponsor

Fax or email this affidavit and any others to NIMS at:

(703) 352-4991

support@nims-skills.org

Machining Performance Affidavit

NIMS Credentialing Program

National Institute for Metalworking Skills, Inc.

1. **Applicant Information.** The individual whose work is being evaluated should be identified by name, address, email address, and birth date.

2. **Performance Evaluation.** Check the appropriate box for the performance activity being evaluated. Please note that this affidavit can apply to **only one** performance activity.

3. **Affidavit of Sponsor.** The Sponsor of the applicant should complete the appropriate section, sign, and date the affidavit. The affidavit, part, and part print should be sent to the MET-TEC for review.

4. **Affidavit of MET-TEC.** The MET-TEC must attest to its findings by inspecting the part presented by the applicant. The original affidavit should be sent to the **sponsor** along with the part and part print. MET-TECs should keep a copy of the affidavit for their file

Performance Standards
Benchwork

Materials

A block of cold rolled mild steel – 1.00 x 2.00 x 3.00 milled or filed to length (see ***Duties and Standards for Machining Skills – Level I***, September 2001) **or** as specified on the print for this project. The block may be prepared for the candidate or you may choose to have the candidate cut or mill the block to length. Use a 3/8" – 16 UNC bolt for stud installation (unplated and low tensile).

Duty

Using mildsteel, hand held drill and hand tap holes. Use hand drills, hand taps, tap wrench, files, scrapers, and coated abrasives to deburr parts. Use arbor presses to perform press fits. Use bench vises and hand tools appropriately.

Performance Standard

Given a process plan, blueprint, access to hand tools, produce a part with two holes prepared for hand tapping, a hole prepared (reamed) for the press fit of a bushing, and a stud for one of the tapped holes. Deburr the part, hand drill and hand tap the holes, press in the bushing, and install the stud. File chamfer

Other Evaluation Criteria

1. *Free of sharp edges or burrs.*
2. *Go/NoGo gage for the threads.*
3. *Length of stud within .03 of basic dimension and square to surface.*

Accuracy Level: +/- .015 unless otherwise specified on the blueprint.

Assessment Equipment and Material

Workstation: Common workbench with at least a four-inch bench vise, an arbor press.

Material: A part machined to the benchwork blueprint, A stud matching the requirements of the blueprint, and a selection of sleeve bushings for the desired fit, cutting oil, and appropriate lubricants.

Tooling: Taps, tap wrenches, assorted files with handles, assorted scrapers, reamer, hacksaw frame with an assortment of blades.

Measuring Instruments: Combination set, height gage or depth micrometer, a ¼-20 plug gage, and .244-.246 pin gauges.

Reference: Machinery's Handbook.

Performance Assessment Worksheet
Benchwork

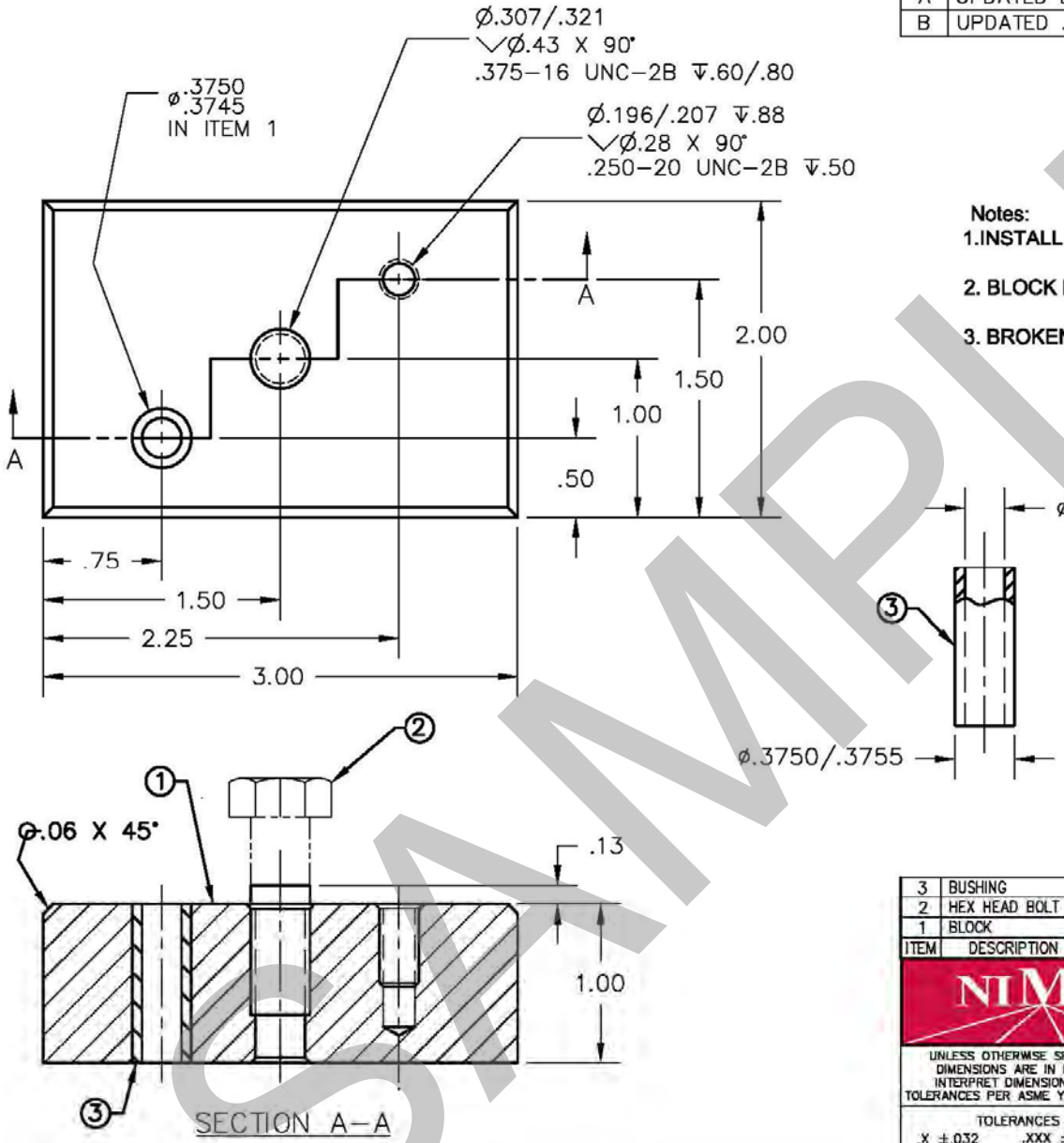
INSTRUCTIONS: Rate the candidate's performance for the Benchwork job according to the criteria below. The checklist below represents only a listing of criteria to be evaluated. It is not a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate must correct or redo the project.

Candidate Name Evaluation Date

Performance Project – Benchwork **Evaluation Criteria**		**Pass**	**Fail**
1. Tap .250 thread .5 min depth (hole 3)	Pass = tapped to the minimum depth Fail = not tapped to minimum depth	❒	❒
2. Stud within .13 surface (hole 2) ± .015	Pass = within tolerance Fail = out of tolerance	❒	❒
3. Press fit bushing check.	Pass = pressed correctly – tight, cannot push out with finger pressure; flush ± .03 Fail = not flush or loose	❒	❒
4. Bench chamfer .06 x 45° on top four edges	Pass = within tolerance .06 ± .015 45° ± 1° Fail = out of tolerance	❒	❒
5. Overall finish and quality	Pass = edges were broken .015" max. Burrs removed. Threads clean Fail = burrs, excessive edge break > .015, congested threads	❒	❒
END OF BENCHWORK EVALUATION			

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The candidate must also complete the performance in layout to be eligible for the related theory exam for the NIMS Credential in Job Planning, Benchwork, and Layout. When both performances have been successfully met, the sponsor should complete and send to NIMS only the completed signed Performance Affidavit*



REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	UPDATED DRAWING AND TITLE BLOCK	3/7/05	LW
B	UPDATED .375–16 HOLE	3/31/05	LW

Notes:
1. INSTALL STUD, CUT AND FILE .13 ABOVE SURFACE
2. BLOCK FREE OF SHARP EDGES OR BURRS
3. BROKEN EDGES .015" MAX

ITEM	DESCRIPTION	SIZE	MATERIAL
3	BUSHING	ø.3750/.3755 OD X .250 ID	BRONZE OR STEEL
2	HEX HEAD BOLT	.375–16 UNC–2A X 1.50 LONG	
1	BLOCK	1.00 X 2.00 X 3.00	CRS OR MILD STEEL

NIMS®

MACHINING SKILLS LEVEL I

Job Duty 2.1
BENCHWORK

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES
.X ±.032 .XXX ±.005
.XX ±.015 ANGLES ± 1 DEG.
FRACTIONS ± 1/64

DESIGNER	DK	11/12/01	MATERIAL: ALUMINUM OR MILD STEEL
DWG CHK			
DWG APPD			
SCALE NTS	DWG.#98201 I		SHEET 1 OF 1

NIMS PROCEDURAL REQUIREMENTS

1. PORTABLE HAND DRILL TO BE USED
2. THIS IS A BENCHWORK JOB. EXCEPT FOR PREPARATION OF THE BLOCK, ALL WORK IS TO BE DONE USING HAND TOOLS
3. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

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Performance Standards
Layout

Material
Cold rolled steel or low carbon steel .25" x 2" x 6.125" with add stock on left end.

Duty
Layout the location of hole centers and surfaces within an accuracy of +/-.015.

Performance Standard
Given a surface plate, surface gage, layout height gage, combination set, scriber, layout ink, prick punch, ball peen hammer, process plan, and part print, layout hole locations, radii, and surfaces matching the specifications.

Other Evaluation Criteria
1. Layout ink is applied to the surface appropriately.
2. Lines are struck once.
3. Intersections are clean and clear.
4. Punch marks are centered on intersections.

Accuracy Level: +/- .015 unless otherwise specified on the blueprint.

Assessment Equipment and Material
Workstation: Common workbench, a layout surface plate at least 12" X 18"
Material: A part matching the layout print, material: Cold rolled mild steel.
Tooling: A scriber, layout ink or a Magic Marker, prick punch, ball peen hammer, angle plate, C-clamps, parallel-closing clamps, magnifying glass.
Measuring Instruments: Combination set, radius gages, 6" dividers, surface gage, or layout height gage.
Reference: Machinery's Handbook.

Performance Assessment Worksheet
Layout

INSTRUCTIONS: Rate the candidate's performance for the Layout job according to the nineteen (19) criteria below. The checklist below only represents a listing of criteria to be evaluated. It is ***not*** a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate/student must correct or redo the project.

Candidate Name Evaluation Date

Performance Project – Layout

Evaluation Criteria

		Pass	Fail
1. Length: 6.032/5.968	Pass = within tolerance Fail = out of tolerance	❒	❒
2. Height: 1.765/1.735	Pass = within tolerance Fail = out of tolerance	❒	❒
3. Height: 1.885/1.855	Pass = within tolerance Fail = out of tolerance	❒	❒
4. Height 1.015/. 985	Pass = within tolerance Fail = out of tolerance	❒	❒
5. Radius: .38 ± .015	Pass = within tolerance Fail = out of tolerance	❒	❒
6. Radius: .25 ± .015	Pass = within tolerance Fail = out of tolerance	❒	❒
7. Location of hole #2: 3.015/2.985-x .515/. 485	Pass = within tolerance Fail = out of tolerance	❒	❒
8. Location of hole #5: 3.015/2.985 x 1.515/1.485	Pass = within tolerance Fail = out of tolerance	❒	❒
9. Location of hole #1: .515/.485 x .515/.485	Pass = within tolerance Fail = out of tolerance	❒	❒

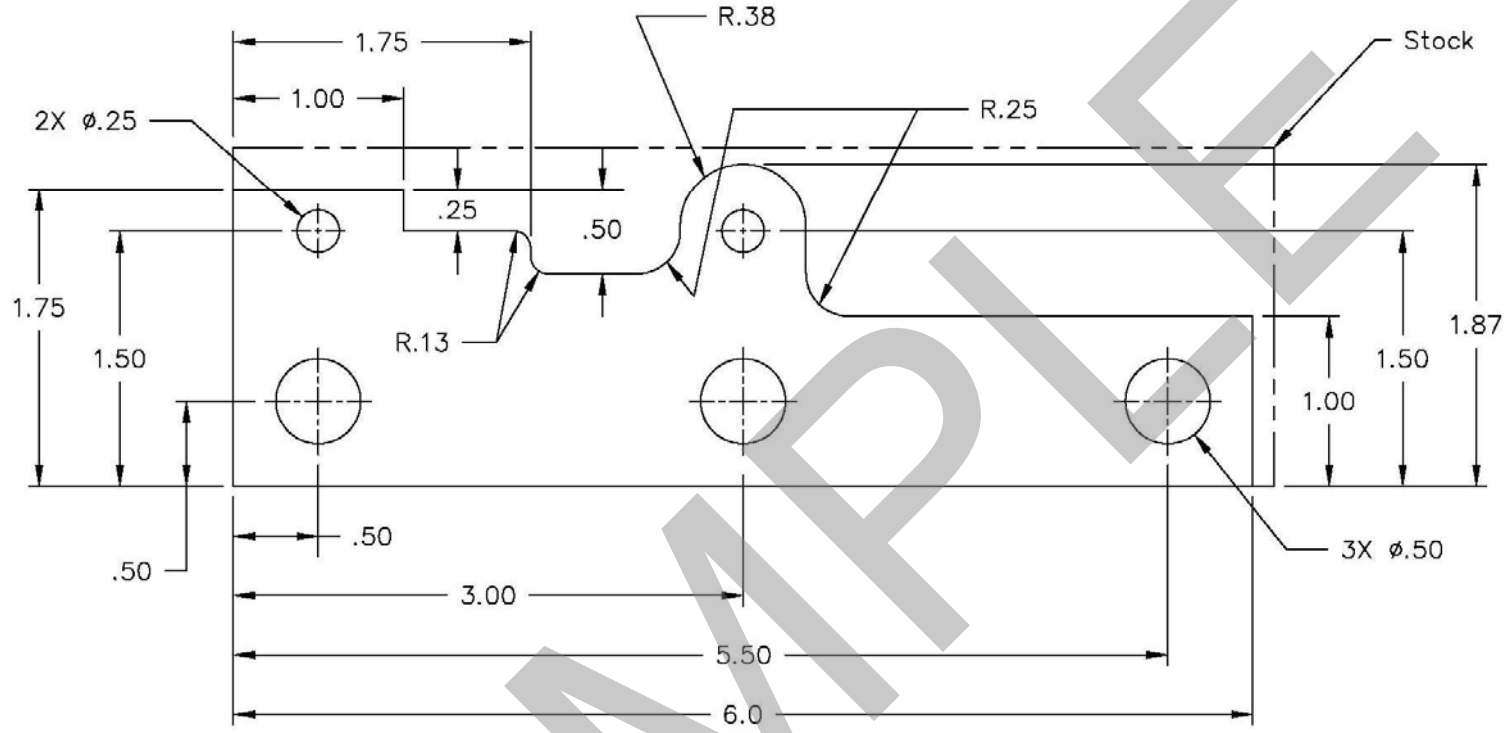
Performance Project – Layout

Evaluation Criteria

		Pass	Fail
10. Location at hole #3: .515/.485 x 1.515/1.485	Pass = within tolerance Fail = out of tolerance	❒	❒
11. Location at hole #4: 5.515/5.485 x .515/.485	Pass = within tolerance Fail = out of tolerance	❒	❒
12 Length to step: 1.75 1.765/1.735	Pass = within tolerance Fail = out of tolerance	❒	❒
13. Length to step: 1.00 1.765/1.735 5	Pass = within tolerance Fail = out of tolerance	❒	❒
14. Step height .25 .265/.235 .50 .515/.485	Pass = within tolerance Fail = out of tolerance	❒	❒
15. Radius: .125 ± .015	Pass = within tolerance Fail = out of tolerance	❒	❒
16. Location of hole #2: 3.015/2.985-x .515/. 485	Pass = within tolerance Fail = out of tolerance	❒	❒
17. Location of hole #5: 3.015/2.985 x 1.515/1.485	Pass = within tolerance Fail = out of tolerance	❒	❒
18. Intersections are struck once	Pass = within tolerance Fail = out of tolerance	❒	❒
19. Location of hole #1: .515/.485 x .515/.485	Pass = within tolerance Fail = out of tolerance	❒	❒

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The candidate must also complete the performance in layout to be eligible for the related theory exam for the NIMS Credential in Job Planning, Benchwork, and Layout. When both performances have been successfully met, the sponsor should complete and send to NIMS only the completed signed Performance Affidavit*

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	UPDATED DRAWING AND TITLE BLOCK	3/7/05	LW



Notes:
BREAK ALL SHARP EDGES

NIMS®

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES
.X ±.032 .XXX ±.005
.XX ±.015 ANGLES ± 1 DEG.
FRACTIONS ± 1/64

DO NOT SCALE DRAWING

MACHINING SKILLS LEVEL I

Job Duty 2.2
Manual Operation, Layout

DESIGNER	DK	11/01/01	MATERIAL
DWG CHK			COLD ROLL STEEL OR MILD STEEL
DWG APPD			
SCALE FULL	DWG.#98202 I		SHEET 1 OF 1

NIMS PROCEDURAL REQUIREMENTS

1. THIS IS A LAYOUT ONLY, DO NOT CUT PART PROFILE
2. CONSTRUCTION LINES FOR LAYOUT ARE PERMISSIBLE
3. LINES ARE STRUCK ONCE
4. INTERSECTIONS ARE CLEAN AND CLEAR
5. PUNCH MARKS ARE CENTERED ON INTERSECTIONS: ± .015
6. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

Performance Standards
Vertical Milling Level I

Material

Mild steel or low carbon steel 1.5" x 2" x 2.6"

Duty

Setup and operate vertical milling machines. Perform routine milling, and location of hole centers within +/-.005".

Performance Standard

Given raw material, print, hand, precision, and cutting tools, as well as access to an appropriate vertical milling machine and its accessories, produce a part matching the blueprint specifications using appropriate trade techniques and speeds and feeds. The part specified should require squaring up from the raw state, have at least one milled slot, require the location of at least two drilled and reamed holes within positional tolerance of .014" and have three steps controlled by tolerances of +/-.005".

Other Evaluation Criteria

1. Finishes are at least 125 Ra microinches.
2. No sharp edges.

Accuracy Level: +/- .015 on all fractions, +/-.005 on all decimals unless otherwise specified on the blueprint. Finishes Surfaces to be square within .005 over 4". Finished surfaces are to be 125 Ra microinches unless otherwise specified.

Assessment Equipment and Material

Workstation: A common workbench, a vertical mill. Table capacity of approximately 12"X36".

Material: A part matching the material requirements of the vertical milling print, material: Mild steel.

Tooling: A 6" milling vise or greater, screws, studs, nuts, washers, and clamps sufficient to secure the vise, or the part to the table. Assorted parallels, ball peen, and soft-faced hammers, assorted cutters and cutter adapters fitted to the machine spindle, files, magnetic base for indicators, soft jaws for the vise, drill chuck, drills, reamers, combination drill and countersink or spotting drill, countersink, and edge finder. Coolants and cutting oil.

Measuring Instruments: 0-3 Micrometers, combination set, dial indicator, 6" rule, a 6" vernier, dial, or electronic caliper, adjustable parallels, and depth micrometer, and surface finish comparison plates.
Pingages. .123", .124", .125", .126", .127"
Solid square
¼ - 20 UNC 2B plug gage
Telescopic gage .750
Small hole gage

Reference: Machinery's Handbook.

Performance Assessment Worksheet
Vertical Milling Level I

INSTRUCTIONS: Rate the candidate's performance for the Milling project according to the sixteen (16) criteria below. The checklist below represents a listing of the only criteria to be evaluated. It is not a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate/trainee must correct or redo the project.

Candidate Name Evaluation Date

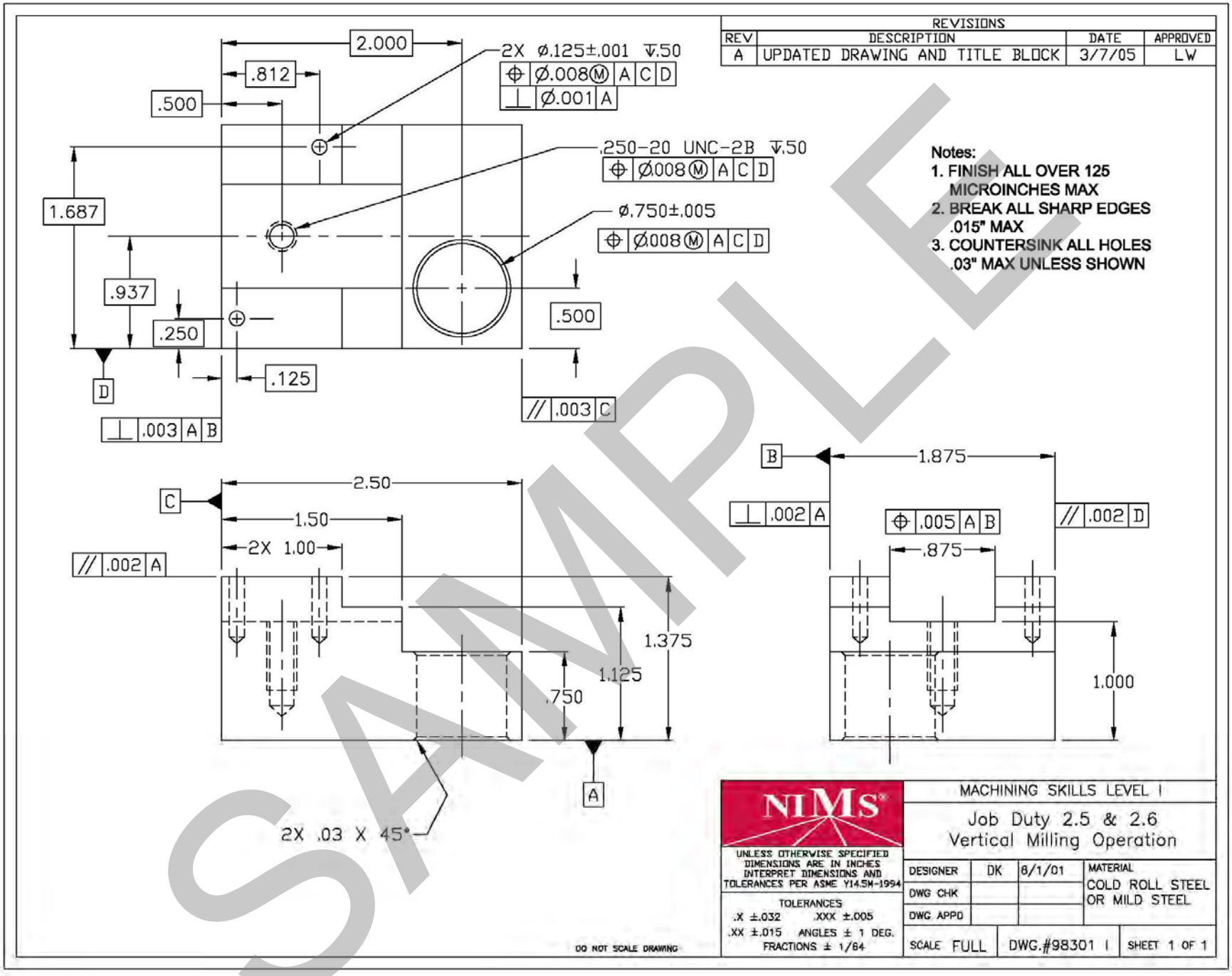
Performance Project – Milling **Evaluation Criteria**		**Pass**	**Fail**
1. Lengths 2.50 ± .015, 1.50 ± .015, 1.00 ± .015	Pass = within tolerance Fail = out of tolerance	❒	❒
2. Heights 1.375 ± .005, 1.125 ± .005, .750 ± .005, 1.000 ± .005	Pass = within tolerance Fail = out of tolerance	❒	❒
3. Width 1.875 ± .005	Pass = within tolerance Fail = out of tolerance	❒	❒
4. All surfaces are ~ or // within specified tolerance zones in the feature control symbols to their respective datums	Pass = within tolerance zones Fail = exceeds tolerance zones	❒	❒
5. ∅.750 ± .005 bore	Pass = within tolerance Fail = out of tolerance	❒	❒
6. True position of ∅.750 bore .014 tolerance zone to datums A, C and D	Pass = within tolerance Fail = out of tolerance	❒	❒
7. ∅.25 - 20 UNC-2B Thread True position tolerance zone of .014 to datums A, C and D (base true position from tap drill diameter.	Pass = within tolerance Fail = out of tolerance	❒	❒

Performance Project – Milling

Evaluation Criteria		Pass	Fail
8 .875 ± .005 position to datum B with a .005 tolerance zone.	Pass = within tolerance Fail = out of tolerance	❒	❒
9. 2 x .125" holes positioned within .812 ± .005 datums A, C, & D	Pass = within tolerance Fail = out of tolerance	❒	❒
10. .125 hole diameter ± .001 (both holes)	Pass = within tolerance Fail = out of tolerance	❒	❒
11. Tap for .25 – 20 x .50 deep min. (No break out at the bottom of the hole)	Pass = within tolerance zones Fail = exceeds tolerance zones	❒	❒
12. .031 deep × 45° chamfers	Pass = within tolerance Fail = out of tolerance	❒	❒
13. Surface finish, no ground surfaces	Pass = 125 Ra microinches or better Fail = over 125 Ra microinches	❒	❒
14. Sharp edges .015 max. and holes countersunk .031 max.	Pass = no sharp edges, within maximum allowance Fail = sharp edges	❒	❒

END OF MILLING EVALUATION

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The* ***part print*** *and the* ***Performance Affidavit*** *should be sent along* ***with the part*** *to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*



NIMS PROCEDURAL REQUIREMENTS

1. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

Performance Standards
Drill Press

Material

Mild steel or low carbon steel 1.00" x 2.00" x 3.00"

Duty

Setup and operate drill presses. Perform routine drill press operations.

Performance Standard

Given a part print, hand precision, and cutting tools, as well as access to a drill press and its accessories, produce a part matching the process plan and the blueprint specifications. Each hole must have at least two secondary operations. The secondary operations will consist of reaming, spot facing, countersinking, counterboring, and counterdrilling. At least one hole must be a blind hole and one a through hole. At least one hole will may be power tapped.

Other Evaluation Criteria

1. Finishes are at least 250 Ra microinches.
2. No sharp edges.
3. The mouths of all holes are lightly countersunk.

Accuracy Level: +/- 1/64 on all fractions, holes square within .005 per inch, drilled diameters, +.006, -.000. Reamed diameters +.001, -.000, +/-.005 on all decimals unless otherwise specified on the blueprint.

Assessment Equipment and Material

Workstation: A common workbench, a drill press. Morse taper #3 spindle capacity or greater preferred. The drill press must have a tapping capability or a tapping head accessory.
Material: A part matching the material requirements of the drill press blueprint, material: mild steel, cutting fluids.

Tooling: A 6" drill vise or greater, screws, studs, nuts, washers, and clamps sufficient to secure the vise, or the part. Assorted parallels, a composition hammer, assorted Morse taper sleeves fitted to the machine spindle, drill chucks, drills, reamers, countersinks, spot facers, counterbores, centerdrills, and various taps. A scriber, layout ink, prick punch, ball peen hammer, angle plate, 6" dividers, surface gage.

Measuring Instruments: Required micrometers, combination set, 6" rule, a 6" vernier, dial, or electronic caliper, go/nogo gage for threads, plug gages, telescoping gages, layout height gage, and surface finish comparison plates.

Reference: Machinery's Handbook.

Performance Assessment Worksheet
Drill Press

INSTRUCTIONS: Rate the candidate's performance for the Drill Press job according to the twelve (12) criteria below. The checklist below represents only a listing of criteria to be evaluated. It is not a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

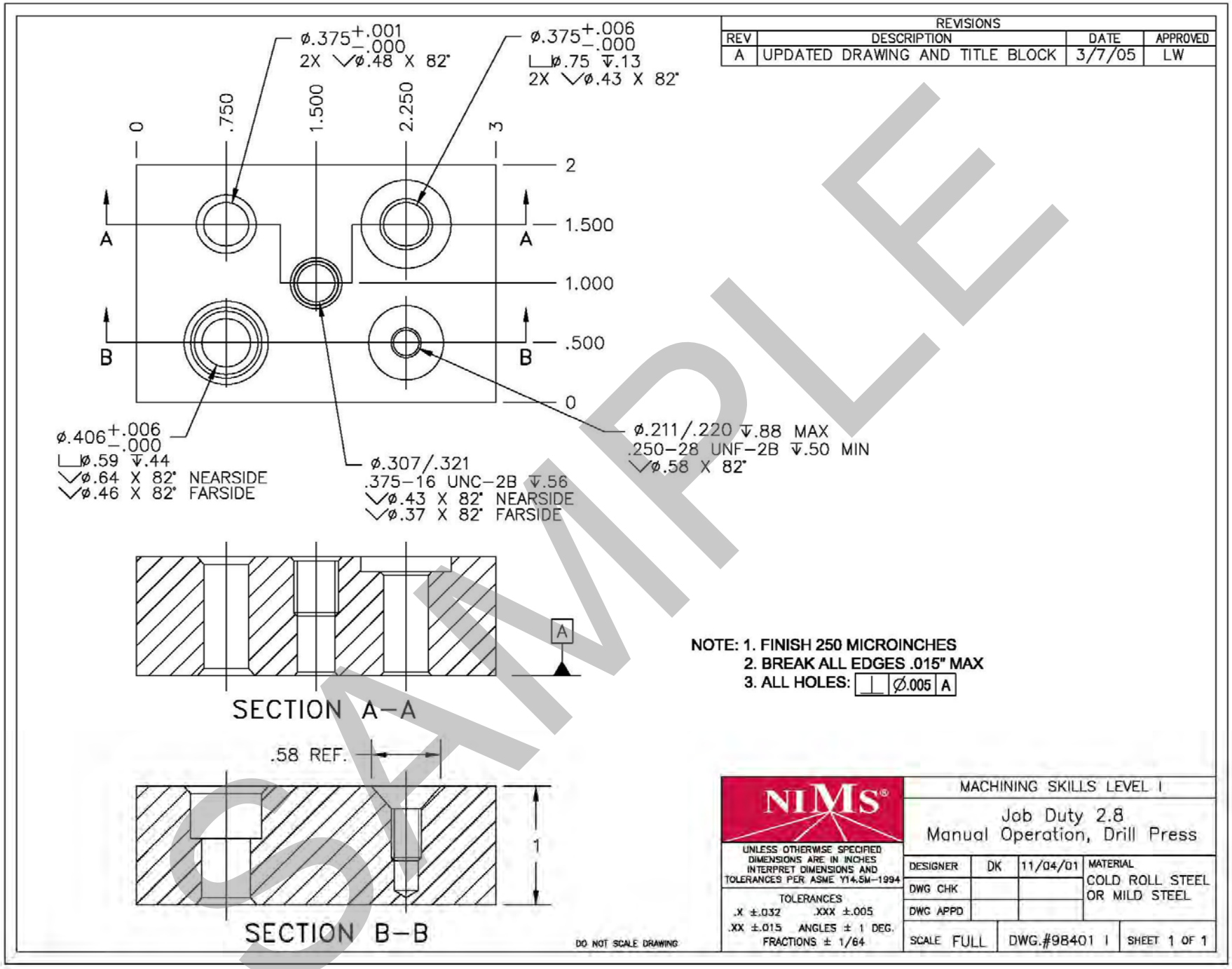
Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate/trainee must correct or redo the project.

Candidate Name _____ Evaluation Date _____

Performance Project – Drill Press **Evaluation Criteria**		**Pass**	**Fail**
1. ∅.375 + .001/-.000 reamed hole (hole 1)	Pass = within tolerance Fail = out of tolerance	❒	❒
2. Location of .375-16 tapped hole 1.500 ± .005 1.00 ± .005	Pass = within tolerance Fail = out of tolerance	❒	❒
3. ∅.375 drilled hole +.006/-.000 ∅ .75 spotface × .13 deep ± .015" (hole 2)	Pass = within tolerance Fail = out of tolerance	❒	❒
4. ∅ .406 +.006/– .000 ∅ .59 c'bore × .44 deep ± .015"	Pass = within tolerance Fail = out of tolerance	❒	❒
5. .250 - 28 UNF 2B .5 deep min. full thread #3 drill (∅.213) .878 deep max.	Pass = within tolerance Fail = out of tolerance	❒	❒
6. .375 UNC 2B, .5 deep min., full thread .75 max. .31 drill hole +.006/-.000	Pass = within tolerance Fail = out of tolerance	❒	❒
7. Holes ⊥ to datum A within .005	Pass = within tolerance Fail = out of tolerance	❒	❒

Performance Project – Drill Press **Evaluation Criteria**		**Pass**	**Fail**
8. Surface finish	Pass = 125 Ra microinches or better Fail = Over 125 Ra microinches	❒	❒
9. Sharp edges broken .015 max.	Pass = no sharp edges Fail = sharp edges	❒	❒
10. Holes: countersunks are within tolerance.	Pass = countersunk within tolerance Fail = holes not countersunk	❒	❒
END OF DRILL PRESS EVALUATION			

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The* ***part print*** *and the* ***Performance Affidavit*** *should be sent along* ***with the part*** *to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*



NIMS PROCEDURAL REQUIREMENTS

1. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

Performance Standards
Surface Grinding

Material

Common mild steel or low carbon steel 1.0 x 1.5 x 2.0 (rough milled)

Duty

Setup and operate manual surface grinders with a 8" and smaller diameter wheel. Perform routine surface grinding, location of surfaces, and squaring of surfaces. Perform wheel dressing.

Performance Standard

Given a block squared up on a mill, part print, hand and precision tools, and choice of a grinding wheels, as well as access to a surface grinder and its accessories, dress the wheel, produce a part matching the print specifications using appropriate trade techniques. The part specified will be in the semi-finished state having been squared up and milled. Finishing the part will require the precision finishing of the six faces of the block to tolerances common to precision grinding for squareness, size, and surface finish characteristics.

Other Evaluation Criteria

1. Finishes are at least 32 Ra microinches or better.
2. Free of sharp edges.

Accuracy Level: +/- .001 on all decimals unless otherwise specified on the print. Square within .001 over 4".

Assessment Equipment and Material

Workstation: A common workbench with a precision surface plate, a surface grinder with a suitable magnetic chuck..

Material: A part matching the material requirements of the surface grinding part print, material: Mild steel.

Tooling: A magnetic chuck, assorted parallels, a suitable angle plate or precision grinding vise, and assorted clamps, composition hammer, assorted grinding wheels suitable for mounting to the spindle, files, magnetic base for indicators, surface gage of sufficient size, and diamond dresser.

Measuring Instruments: Required micrometers, combination set, dial test indicator, 6" rule, a 6" vernier, dial, or electronic caliper, adjustable parallels, depth micrometer set, master square or magnetic square, surface finish comparison gages.

Reference: Machinery's Handbook

Gage blocks
V block
Sine chuck
Sine plate

Performance Assessment Worksheet
Surface Grinding

INSTRUCTIONS: Rate the candidate's performance for the Surface Grinding job according to the eleven (11) criteria below. The checklist below only represents a listing of criteria to be evaluated. It is ***not*** a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

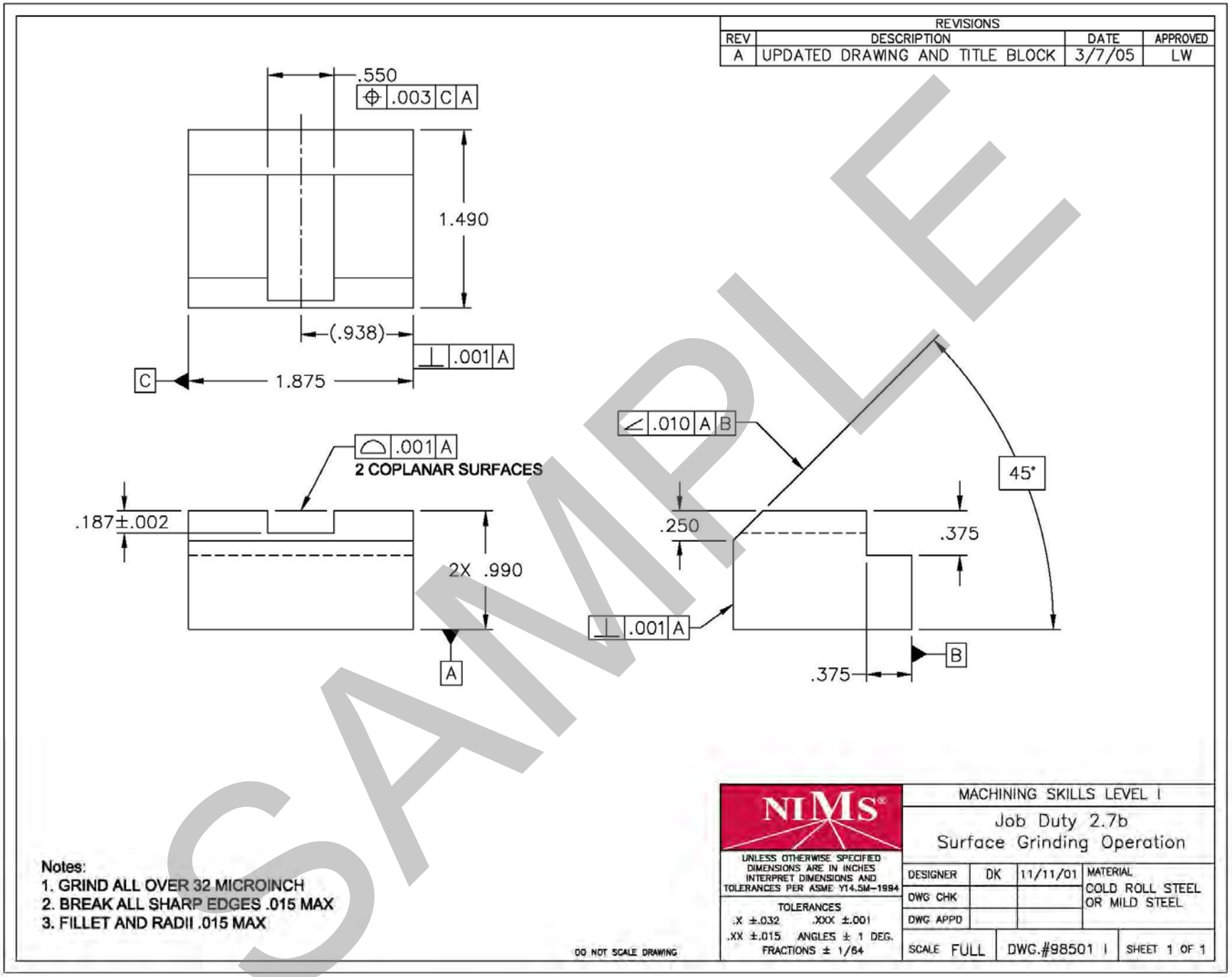
Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate must correct or redo the project.

Candidate Name Evaluation Date

Performance Project -Surface Grinding **Evaluation Criteria**		**Pass**	**Fail**
1. .990 ± .001	Pass = within tolerance Fail = out of tolerance	❒	❒
2. 1.490 ± .001	Pass = within tolerance Fail = out of tolerance	❒	❒
3. 1.875 ± .001	Pass = within tolerance Fail = out of tolerance	❒	❒
4. .187 ± .002 slot depth	Pass = within tolerance Fail = out of tolerance	❒	❒
5. Perpendicularity & profile per GD&T call outs within specified tolerance zones	Pass = within specifications Fail = out of specifications	❒	❒
6. .550 ± .001 Position tolerance .003 to datum C & A	Pass = within tolerance Fail = out of tolerance	❒	❒
7. .375 ± .001 Width .375 ± .001 Depth	Pass = within tolerance Fail = out of tolerance	❒	❒

Performance Project -Surface Grinding **Evaluation Criteria**		**Pass**	**Fail**
8. Angularity of 45° within .010 .250 ± .001 depth of 45°angle	Pass = within tolerance Fail = out of tolerance	❒	❒
9. Surface finish	Pass = 32 Ra microinches or better Fail = over 32 Ra microinches	❒	❒
10.Fillet radii .015 max.	Pass = less than .015 Fail = greater than .015	❒	❒
11. Sharp edges broken .015 max.	Pass = below max. Fail = above max.	❒	❒
END OF SURFACE GRINDING EVALUATION			

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The* ***part print*** *and the* ***Performance Affidavit*** *should be sent along* ***with the part*** *to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*



NIMS PROCEDURAL REQUIREMENTS

1. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

Performance Standards
Turning Between Centers

Material

Mild steel or low carbon steel ∅1.00 x 5.15"– saw enough material to face both ends and center drill.

Duty

Setup and carry out between centers turning operations for straight turning.

Performance Standard

Given raw material, process plan, part print, hand, precision, and cutting tools, as well as access to an appropriate turning machine and its accessories, produce a part matching the process plan and the part print specifications using appropriate trade techniques and speeds and feeds. The part specified should have at least three diameters within +/-.002, one UNC external thread , one UNF external thread, and require part be turned end for end to complete.

Other Evaluation Criteria

1. Finishes are at least 125 Ra microinches.
2. No sharp edges.

Accuracy Level: +/- .015 on all fractions, +/-.005 on all decimals unless otherwise specified on the part print. Diameters to be coaxial within .002 total run out.

Assessment Equipment and Material

Workstation: A common workbench, an engine lathe of 14"X 30" minimum capacity, a three-jaw universal scroll chuck, or a four-jaw independent chuck. The lathe must have a quick change gear box with the threads pitch called for on the blueprint available from the gear box.

Material: A part matching the material requirements of the turning print, material: Mild steel.

Tooling: Tool post, right and left hand turning tools capable of turning to a square shoulder, an external threading tool matched to the profile of the thread called out on the turning blueprint, a drill chuck, combination drill and countersink, drive dog, grooving/ parts tools, 45° chamfer tools, live center, dead center fitted to the spindle taper, magnetic base for a dial indicator, files, wrenches as necessary.

Measuring Instruments: Required micrometers, combination set, thread pitch gages, center gage, thread ring gages, dial indicator, 6" rule, 6"vernier, dial, or electronic caliper, surface finish comparison plates.

Reference: Machinery's Handbook

Performance Assessment Worksheet
Turning Between Centers

INSTRUCTIONS: Rate the candidate's performance for the Turning Between Centers job according to the twelve (12) criteria below. The checklist below represents only a listing of criteria to be evaluated. It is ***not*** a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that **all** specifications must be met within the allowable tolerance limits. If the part does part does not meet all specifications, the candidate must correct or redo the project.

Candidate Name Evaluation Date

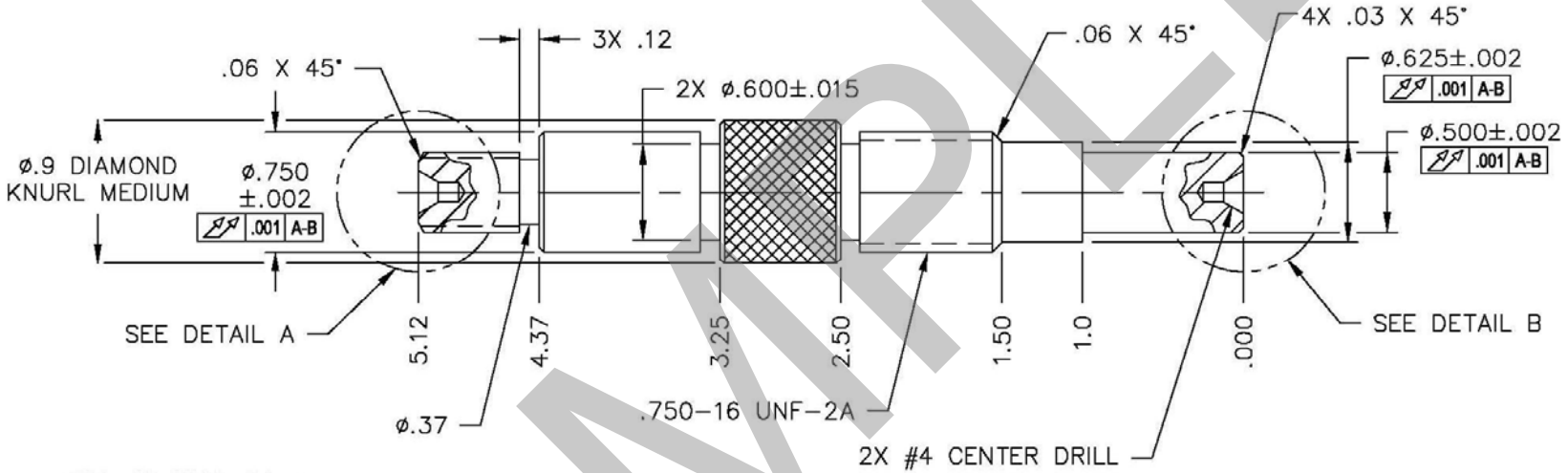
Performance Project – Turning Between Centers **Evaluation Criteria**		**Pass**	**Fail**
1. ∅.500 ± .002 ∅.625 ± .002 ∅.750 ± .002	Pass = within tolerance Fail = out of tolerance	❒	❒
2. Diameters of grooves adjacent to the knurl: .600 ± .015 (2 places)	Pass = within tolerance Fail = out of tolerance	❒	❒
3. Total runout on specified diameters within .001 TIR as specified to combined datums A - B Diameters circled 1, 2, 3. TIR of coaxial dia's .010	Pass = within tolerance Fail = out of tolerance	❒	❒
4. 5.12 ± .015 Overall Length	Pass = within tolerance Fail = out of tolerance	❒	❒
5. 3.25 ± .015 Length 4.37 ± .015 Length	Pass = within tolerance Fail = out of tolerance	❒	❒
6. 2.50 ± .015 Length 1.0 ± .032	Pass = within tolerance Fail = out of tolerance	❒	❒
7. .500 – 13 UNC – 2A Pitch diameter tolerance .4435/.4485	Pass = within tolerance Fail = out of tolerance	❒	❒
8. 750 – 16 UNF – 2A Pitch diameter tolerance: .7029/.7079	Pass = within tolerance Fail = out of tolerance	❒	❒
9. Groove width: .12 ± .015 (3 places) Groove diameter: ∅.37 ± .015	Pass = within tolerance Fail = out of tolerance	❒	❒

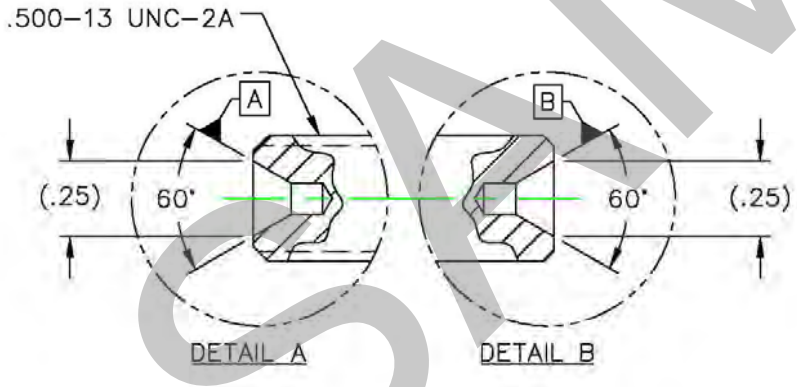
Performance Project – Turning Between Centers **Evaluation Criteria**		**Pass**	**Fail**
10. Diamond knurl- no flakes ∅.9 ± .032	Pass = within tolerance Fail = out of tolerance	❒	❒
11. Surface finish	Pass = 125 Ra microinches or better Fail = over 125 Ra microinches	❒	❒
12. Sharp edges: .015 max.	Pass = radii less than .015 Fail = sharp edges, radii greater than .015	❒	❒
END OF TURNING BETWEEN CENTERS EVALUATION			

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The part print and the* ***Performance Affidavit*** *should be sent along* ***with the part*** *to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*

NOTES:
1. FINISH ALL OVER TO 125
2. BREAK ALL SHARP EDGES .015 MAX
3. UNLESS OTHERWISE SPECIFIED, ALL COAXIAL DIAMETERS ⌖ .010 A-B

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	UPDATED DRAWING AND TITLE BLOCK	3/7/05	LW





DO NOT SCALE DRAWING

NIMS®

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES
.X ±.032 .XXX ±.005
.XX ±.015 ANGLES ± 1 DEG.
FRACTIONS ± 1/64

MACHINING SKILLS LEVEL I

Job Duty 2.3
Turning Between Centers

DESIGNER	DK	11/15/01	MATERIAL
DWG CHK			COLD ROLL STEEL OR MILD STEEL
DWG APPD			
SCALE FULL	DWG.#98601 I		SHEET 1 OF 1

NIMS PROCEDURAL REQUIREMENTS

1. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

Performance Standards
Turning-Chucking

Material

Cold rolled steel or low carbon steel, ∅2" x 4.5"

Duty

Setup and carry out chucking operations for turning.

Performance Standard

Given raw material, part print, hand, precision, and cutting tools, as well as access to an appropriate turning machine and its accessories, produce a part matching the print specifications using appropriate trade techniques and speeds and feeds. The part specified should have at least three diameters within +/-.005", two bores within +/-.005", one UNC external thread, and require at least two chuckings or other workholding setup.

Other Evaluation Criteria

1. Finishes are at least 125 Ra microinches.
2. No sharp edges.

Accuracy Level: +/- .015 on all fractions, +/-.005 on all decimals unless otherwise specified on the blueprint. Diameters to be coaxial within .002 total run out.

Assessment Equipment and Material

Workstation: A common workbench, an engine lathe of 14"X 30" minimum capacity, a three jaw universal scroll chuck, and a four jaw independent chuck. The lathe must have a quick change gear box with the threads called for on the print available from the gear box.

Material: A part matching the material requirements of the turning blueprint, material: Mild steel.

Tooling: Tool post, right and left hand turning tools capable of turning to a square shoulder, an external threading tool matched to the profile of the thread called out on the turning print, a boring bar and boring tool capable of boring to a square shoulder, a drill chuck, centerdrill, and assorted drills necessary to rough out the bore, magnetic base for a dial indicator, thread wires for chucks, files, wrenches as necessary.

Measuring Instruments: Required micrometers, combination set, thread pitch gages center gage, pitch micrometer, plug gage and thread ring, dial indicator, 6" rule, a 6" vernier, dial, or electronic caliper, telescoping gages or inside calipers, and surface finish comparison plates.

Reference: Machinery's Handbook

Performance Assessment Worksheet
Turning-Chucking

INSTRUCTIONS: Rate the candidate's performance for the Turning- Chucking job according to the criteria below. The checklist below represents only a listing of criteria to be evaluated. It is ***not*** a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that **all** specifications must be met within the allowable tolerance limits. If the part does not meet **all** specifications, the candidate must correct or redo the project.

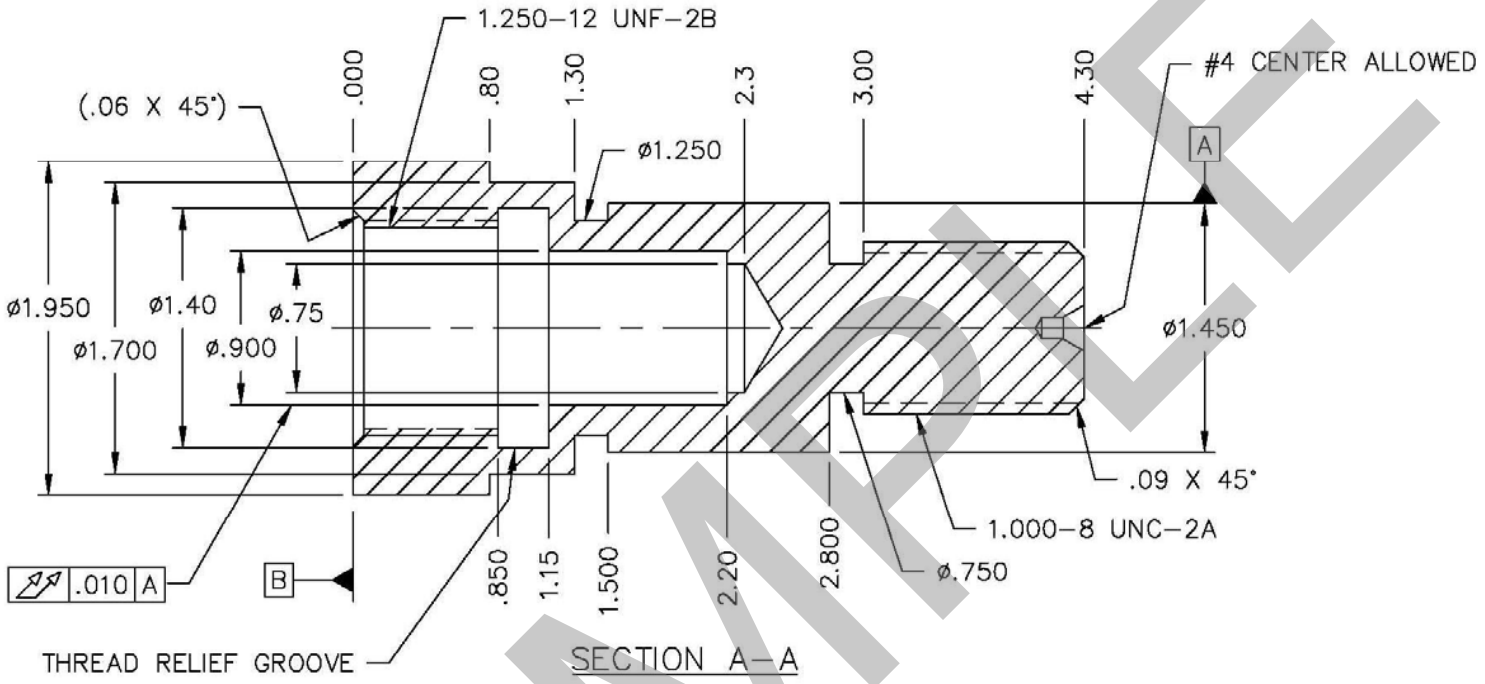
Candidate Name Evaluation Date

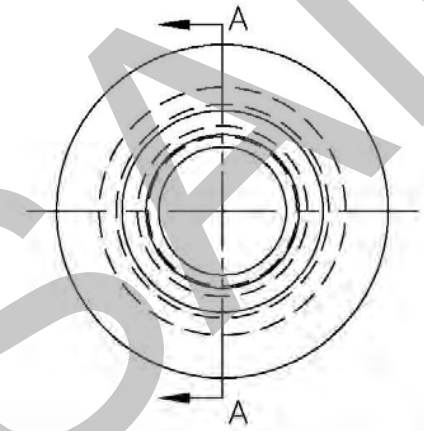
Performance Project – Turning-Chucking **Evaluation Criteria**		**Pass**	**Fail**
1. Length dimensions .80 ± .015 1.30 ± .015 2.800 ± .005 4.30 ± .015	Pass = all dimensions within tolerance Fail = one or more dimensions not within tolerance	❒	❒
2. Outside diameters ∅1.950 ± .005 ∅ 1.700 ± .005 ∅1.450 ± .005	Pass = all dimensions within tolerance Fail = one or more not within tolerance	❒	❒
3. Groove dimensions ∅.750 ± .005 ∅1.250 ± .005	Pass = both grooves within tolerances Fail = one or both grooves not within tolerance	❒	❒
4. External thread 1-000-8 UNC 2A thread Pitch diameter: 0.9100 / 0.9168	Pass = Gage "go" compliance or within pitch diameter tolerance Fail = Accepts "no-go" gage or out of pitch diameter tolerance	❒	❒
5. Internal thread 1 .25 -12 UNF - 2B thread	Pass = meets "Go" condition on gage Fail = Accepts "No-go" gage	❒	❒
6. Drill and bore hole 2.20 ± .015 bore depth 2.3 ± .032 drill depth ∅.75 ± .015 drill hole	Pass = all dimensions within tolerance Fail = one or more dimensions out of tolerance	❒	❒

Performance Project – Turning-Chucking **Evaluation Criteria**		**Pass**	**Fail**
7. ∅.900 bore concentric to datum A .010 TIR	Pass = TIR of .005 or less Fail = TIR exceeds .005	❒	❒
8. Coaxial on all non-threaded diameters .010 TIR on all diameters	Pass = all diameters within TIR callout Fail = one or more diameters exceed TIR callout	❒	❒
9. Bore diameter .900 ± .005	Pass = within tolerance Fail = out of tolerance	❒	❒
10. External surfaces ⊥ surfaces to datum B .005	Pass = all surfaces perpendicular within .005 (Reference surface is datum B) Fail = one or more surfaces exceeds .005	❒	❒
11. Surface finish	Pass = 125 Ra microinches or better Fail = over 125 Ra microinches	❒	❒
12. Sharp edges not to exceed .015	Pass = no sharp edges Fail = sharp edges or edge break exceed .015	❒	❒
END OF TURNING-CHUCKING EVALUATION			

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The* ***part print*** *and the* ***Performance Affidavit*** *should be sent along* ***with the part*** *to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	UPDATED DRAWING AND TITLE BLOCK	3/7/05	LW





DO NOT SCALE DRAWING

NOTES:
1. FINISH ALL OVER 125 MICROINCHES MAX
2. BREAK ALL SHARP EDGES .015" MAX.
3. EXTERNAL SURFACES: ⊥ Ø.005 B
4. ALL EXTERNAL NON-THREADED DIAMETERS: ↗ .010 B A

NIMS®

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES
.X ±.032 .XXX ±.005
.XX ±.015 ANGLES ± 1 DEG.
FRACTIONS ± 1/64

MACHINING SKILLS LEVEL I

Job Duty 2.4
Turning Operation, Chucking

DESIGNER	DK	11/8/01	MATERIAL: COLD ROLL STEEL OR MILD STEEL
DWG CHK			
DWG APPD			
SCALE FULL	DWG.#98601 I		SHEET 1 OF 1

NIMS PROCEDURAL REQUIREMENTS

1. SUBMIT THIS PRINT AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

Performance Standards
CNC Milling

Material

Aluminum or mild steel.

Duty

- Set up, program, and operate a CNC mill or machining center and manufacture a part within tolerance
- Work from a process sheet and part print.
- Understand the x, y, z Cartesian coordinate system.
- Create a tool set up sheet.
- Understand fundamental machine processing, feeds and speed, and select simple part.

Performance Standard

Write a program at the machine or off line. Setup the machining operation and perform standards given on mill operations (2.10) to develop a simple part (with linear and circular interpolations).

Accuracy Level: Match the requirements of the part print. 63 Ra microinch finish

Assessment Equipment and Material:

Workstation: A standard workbench, a CNC mill with continuous path capability on 2½ axes.

Material: A part matching the material requirements of the part print, material: cold rolled steel.

Tooling: A 6" milling vise or greater, screws, studs, nuts, washers, and clamps sufficient to secure the vise, or the part to the table. Assorted parallels, ball peen, and composition hammers, assorted cutters and cutter adapters fitted to the machine spindle, files, magnetic base for indicators, soft jaws for the vise and assorted cutters.

Measuring Inst: Required micrometers, combination set, dial indicator, 6" rule, a 6" vernier, dial, or electronic caliper, adjustable parallels, edge finder, appropriate tools for determining squareness, and surface finish comparison standards.

Reference: Machinery's Handbook, operator's manual of the machine tool.

Performance Assessment Worksheet
CNC Milling

INSTRUCTIONS: Rate the candidate's performance for the CNC Milling job according to the criteria below. The checklist below represents only a listing of criteria to be evaluated. It is not a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate/trainee must correct or redo the project.

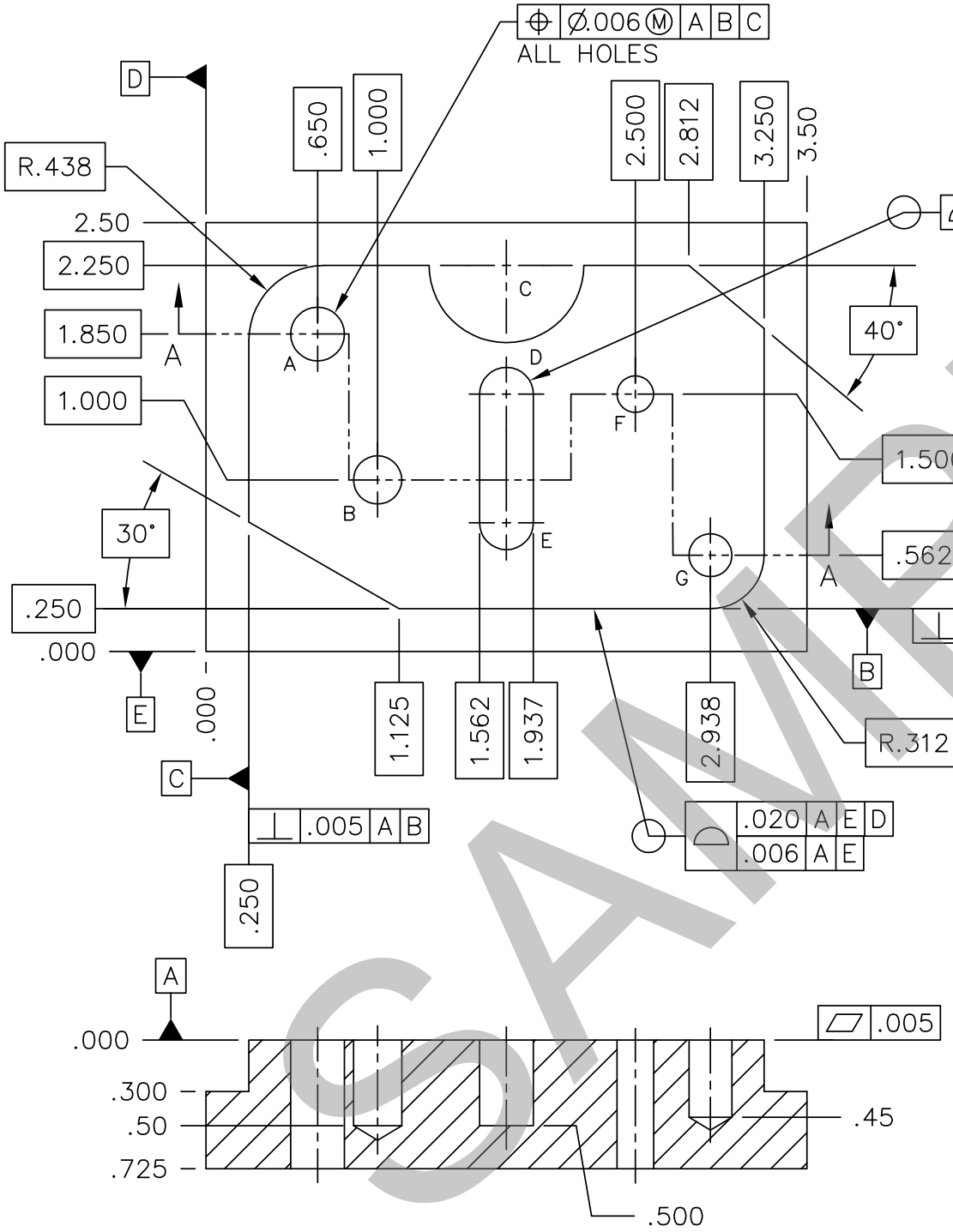
Candidate Name _____ Evaluation Date _____

Performance Project – CNC Milling **Evaluation Criteria**		**Pass**	**Fail**
1. Overall Dimensions Length 3.50 ± .010 Width 2.50 ± .010 Thickness .725 ± .003	Pass = within tolerance Fail = out of tolerance	❒ ❒ ❒	❒ ❒ ❒
2. Profile tolerance within limits Position ± .006 Depth .300 ± .003	Pass = within tolerance Fail = out of tolerance	❒ ❒	❒ ❒
3. Hole A Position ± .006 Diameter ± .002	Pass = within tolerance Fail = out of tolerance	❒ ❒	❒ ❒
4. Hole B Position ± .006 Diameter .281 ± .005 Depth .500 ± .010	Pass = within tolerance Fail = out of tolerance	❒ ❒ ❒	❒ ❒ ❒
5. Hole F Position ± .006 Diameter ± .002	Pass = within tolerance Fail = out of tolerance	❒ ❒	❒ ❒
6. Hole G Position ± .006 Diameter ± .005 Depth .45 ± .010	Pass = within tolerance Fail = out of tolerance	❒ ❒ ❒	❒ ❒ ❒
7. Slot D-E Position ± .006 Width .375 ± .002 Depth .500 ± .003	Pass = within tolerance Fail = out of tolerance	❒ ❒ ❒	❒ ❒ ❒

Performance Project – CNC Milling **Evaluation Criteria**		**Pass**	**Fail**
8. Break all sharp edges .015 max.	Pass = within tolerance Fail = out of tolerance	❒	❒
9. Surface finish 63 Ra microinches min.	Pass = within tolerance Fail = out of tolerance	❒	❒
END OF CNC MILLING EVALUATION			

It is important to note that the part must be 100% within the tolerances listed on the print. The criteria listed here are a guide for instructors and supervisors. Not every dimension is included in this guide. Nonetheless, the completed part must be 100% within the specifications of the print. The print takes precedence over this guide when the parts are inspected by the MET-TEC committee. *The* ***part print*** *and the* ***Performance Affidavit*** *should be sent along* ***with the part*** *to the MET-TEC for evaluation. Send to NIMS only the completed Performance Affidavit, signed by the MET-TEC members. A copy of the Performance Affidavit should be retained in the candidate's file documenting completed performance for this credential.*

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	UPDATED DRAWING AND TITLE BLOCK	3/7/05	LW
B	ADDED DIMENSIONS FOR SLOT	4/21/05	LW
C	REVISED DIMENSIONS FOR SLOT	11/13/09	LW
D	REVISED DIMENSIONS	4/5/12	LW



SECTION A–A

NOTES:

1.

FEATURE	SIZE	X	Y
A	.312 ±.002		
B	.281 ±.005		
C	R.450	1.750	2.250
D	R.1875	1.750	1.500
E	R.1875	1.750	.750
F	.213 ±.002		
G	.250 ±.005		

2. BREAK ALL SHARP EDGES: 1/64 MAXIMUM
3. SURFACE FINISH TO BE 63 MICROINCHES MAXIMUM

DO NOT SCALE DRAWING

NIMS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES

.XX ±.01 .XXX ±.003

ANGLES ± 1 DEG.

MACHINING SKILLS LEVEL I

Job Duty 2.10

CNC: Milling

DESIGNER	CLC	02/21/02	MATERIAL
DWG CHK			ALUMINUM OR MILD STEEL
DWG APPD			.75 X 2.5 X 3.5

SCALE FULL | DWG.#98431 I | SHEET 1 OF 1

Performance Standards
CNC Turning

Material

Aluminum or mild steel.

Duty

- Set up, program and operate a CNC lathe or turning center and manufacture a part within tolerance.
- Work from a process sheet.
- Understand the x, z Cartesian coordinate system.
- Create a tool set up sheet.
- Understand fundamental machine processing, feeds and speed, and select simple part.

Performance Standard

Write a program at the machine or off line. Setup the machining operation and perform all standards given on lathe operations (2.9) to develop a simple part (with linear and circular interpolations).

Accuracy Level: Match the requirements of the part print.

Assessment Equipment and Material:

Workstation: A standard workbench, a CNC mill with continuous path capability on 2½ axes.

Tooling: CNC lathe or turning center and computer workstation
Material as per print
Tooling as appropriate
Measuring instruments as needed
Reference: Operation process sheet

Measuring Inst: Required micrometers, combination set, dial indicator, 6" rule, a 6" vernier, dial, or electronic caliper, adjustable parallels, edge finder, appropriate tools for determining squareness, and surface finish comparison standards.

Reference: Machinery's Handbook, operator's manual of the machine tool.

Performance Assessment Worksheet
CNC Turning

INSTRUCTIONS: Rate the candidate's performance for the CNC Turning job according to the criteria below. The checklist below represents only a listing of criteria to be evaluated. It is not a sequence of process steps or a process plan for making the part. For each item, check the box under Pass or Fail accordingly.

Remember, NIMS requires that all specifications must be met within the allowable tolerance limits. If the part does not meet all specifications, the candidate/trainee must correct or redo the project.

Candidate Name Evaluation Date

Performance Project – CNC Turning **Evaluation Criteria**		**Pass**	**Fail**
1. 1.850 Length	Pass = within tolerance Fail = out of tolerance	❒	❒
2. 2.850 Length	Pass = within tolerance Fail = out of tolerance	❒	❒
3. 3.850 Length	Pass = within tolerance Fail = out of tolerance	❒	❒
4. 4.100 Length	Pass = within tolerance Fail = out of tolerance	❒	❒
5. 4.725 Length	Pass = within tolerance Fail = out of tolerance	❒	❒
6. ∅.750	Pass = within tolerance Fail = out of tolerance	❒	❒
7. ∅ 1.250	Pass = within tolerance Fail = out of tolerance	❒	❒

Performance Project – CNC Turning **Evaluation Criteria**		**Pass**	**Fail**
8. ∅ 1.750	Pass = within tolerance Fail = out of tolerance	❒	❒
9. ∅ 2.250	Pass = within tolerance Fail = out of tolerance	❒	❒
10. Runnouts .005	Pass = within tolerance Fail = out of tolerance	❒	❒
11. Surface finish 63 Ra microinches min.	Pass = within tolerance Fail = out of tolerance	❒	❒
12. Unless otherwise specified, all coaxial diameters .010	Pass = within tolerance Fail = out of tolerance	❒	❒
13. Radius .200	Pass = within tolerance Fail = out of tolerance	❒	❒
14. Chamfer .06 X 45°	Pass = within tolerance Fail = out of tolerance	❒	❒
END OF CNC TURNING EVALUATION			

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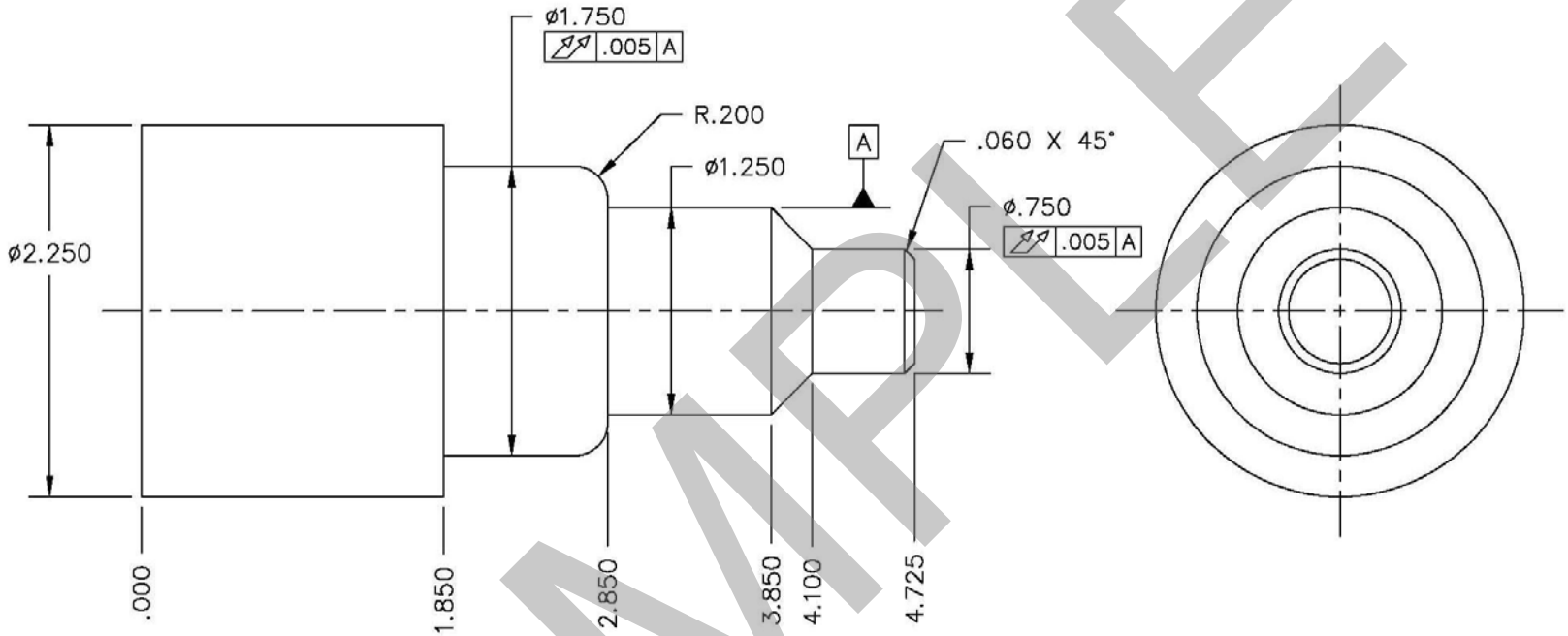

NOTES:
1. CENTER PERMISSIBLE (Ø.750 END)
2. ALL FILLETS AND RADII .015 INCHES MAXIMUM
3. SURFACE FINISH ALL OVER 63 MICROINCHES MAXIMUM
4. UNLESS OTHERWISE SPECIFIED, ALL COAXIAL DIAMETERS
   .010 A

DO NOT SCALE DRAWING

NIMS

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994

TOLERANCES
.X ±.020 .XXX ±.003
.XX ±.010 ANGLES ± 1 DEG.
FRACTIONS ± 1/64

MACHINING SKILLS LEVEL I

Job Duty 2.11
CNC: Turning

DESIGNER	CLC	02/23/02	MATERIAL: ALUMINUM OR MILD STEEL
DWG CHK			
DWG APPD			
SCALE FULL	DWG.#98441 I	SHEET 1 OF 1	

NIMS PROCEDURAL REQUIREMENTS

1. PROGRAM MUST BE WRITTEN IN LONG HAND – NO CAM
2. COORDINATE CALCULATIONS CAN BE FOUND WITH GEOMETRY OR TRIG
3. SUBMIT THE CALCULATIONS WITH THE PROGRAM
4. SUBMIT THIS PRINT, COPY OF PROGRAM CODE (LONGHAND), AND WORKPIECE ALONG WITH THE PERFORMANCE AFFIDAVIT FOR EVALUATION

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