



Credentialing Achievement Record

Industrial Technology Maintenance Electronic Control Systems Level I

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ITM CREDENTIALING PROGRAM

Level I Credentialing Achievement Record (CAR)

Name:	Job Title / Student ID:
Duty Cluster Name: Electronic Control Systems Level I	
Date Completed: _____	

Directions

This Credentialing Achievement Record (**CAR**) is the official training and performance document for the above named NIMS credentialing candidate. The CAR is used by the trainer/supervisor and candidate as a record of individual performance. The CAR is the vehicle that will allow eligible candidates to take the NIMS online theory credentialing examination(s). Supervisors, trainers, and candidates should take care of this record and be sure that it is accurate, kept up to date, filled out correctly, and properly stored. All information recorded in the CAR should be considered **CONFIDENTIAL**. The CAR is the property of the candidate and must be returned to the candidate when employment ends or at the completion of the training / school program.

Candidates may select as many credentialing areas as applicable to the facility or appropriate to the job. There are separate CAR booklets for each credentialing area. This CAR opens with a list of Critical Work Activities & Experiences (or experience statements) that must be acknowledged and documented. However, actual performance is assessed in two ways: 1) by fulfilling these general experience and historical statements and 2) by an examiner administering the *Skill Checks (or performance assessments)*. Three successful Skill Check attempts are required. Skill Checks are clearly marked with the title "**Skill Check.**"

Candidate performance is documented by a checkmark on the *Examiner's Checklist*. All Skill Checks must be co-initialed and dated by the trainer/supervisor and candidate. Work activity sign-offs must be co-initiated by the trainer/supervisor and candidate then dated.

When the candidate has successfully demonstrated abilities in each of the critical work activities and experiences and skills checks to the satisfaction of the supervisor or trainer, he/she is eligible to take the online theory credentialing exam. The Affidavit of Successful Completion is completed and signed by the sponsor. It is co-signed by the trainer/ supervisor and the candidate, and then e-mailed to **support@nims-skills.org** to request access to the online theory exam. The candidate's sponsor will be notified when the online theory exam is made available on the NIMS testing system.

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Examiner's Checklist: Electronic Control Systems Level I

Critical Work Activities & Experiences	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
All of the following statements must be completed prior to submission of the CAR			
1.1 Adhere to safety, health and environmental rules and regulations			
Describe use and selection of fire extinguishers			
Demonstrate use of fall protection safety in use of ladders and platforms			
Demonstrate use of common PPE for maintenance work to be performed			
Perform a job safety analysis of work to be performed			
Perform spill or release reporting procedure			
Perform spill or release clean-up procedure			
Perform injury reporting procedure			
1.2 Describe, locate, and interpret safety data sheets			
Describe, locate, and interpret the following for safety data sheets: <ul style="list-style-type: none"> • Locate current safety material data sheets for given machines or processes • Interpret information on SDS and apply • Determine appropriate PPE required • Describe uses of SDS 			
1.3 Technical documentations			
Locate and interpret function and operation using technical documents			
Identify symbols for duty area			
Demonstrate knowledge of how to locate and maintain maintenance documents			

Skill Check #1	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
1.1 Install and test a solid state relay			
Locate electrical schematic with solid state control relays, output indicators, manual pushbuttons, disconnect switch, and circuit protection			
Obtain components required, identifying solid state relays given specifications			
Install lockout/tagout			
Wire electrical control components given circuit schematic <ul style="list-style-type: none"> • Interpret solid state relay schematic symbols 			
Test operation of solid state relay with multimeter: <ul style="list-style-type: none"> • Remove lockout/tagout • Test relay output using multimeter 			
1.2 Install, wire and test AC variable frequency drive			
Locate electrical schematic with AC variable frequency drive, 3-phase motor, manual switches, disconnect switch, and circuit protection			
Identify VFD and verify that it is the correct model: <ul style="list-style-type: none"> • Verify nameplate data • Wire for specific voltage specified by schematic 			
Install lockout/tagout			
Wire VFD and other electrical control components given circuit schematic: <ul style="list-style-type: none"> • Wires are proper size, length, color • Wires are properly stripped and run in raceways • Components are correctly connected and wire labels added • Connect grounding ring • Use safety procedures for tightening, disconnecting, or connecting electrical conductors and components 			
Change default parameters to parameters specified using onboard HMI			
Perform functional check			

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Skill Check #1	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
1.3 Install, wire, transfer programs, and test Programmable Controller and HMI			
Locate electrical schematic with PLC, HMI, motor starter, fluid power components, VFD, 3-phase motor, manual switches, disconnect switch, and circuit protection			
Install lockout/tagout			
Install PLC, HMI and other electrical control components given ladder diagram circuit schematic			
Power up system and transfer program to PLC and HMI			
Perform functional check			
1.4 Basic system troubleshooting and adjustment			
Identify any applicable diagram, program and/or I/O diagram with PLC, HMI, actuators, and other I/O devices			
Perform functional check on machine			
Demonstrate ability to make machine adjustments or instruction type, add an additional interlock or output device			
Demonstrate ability to troubleshoot and identify fault(s)			
During troubleshooting process, demonstrate ability to use: <ul style="list-style-type: none"> • Communicate to obtain information about machine • Locate and interpret machine operation history, maintenance logs, and references • HMI as a troubleshooting tool • Troubleshooting flow chart • Systematic troubleshooting methodologies 			
Replace/Repair failed component			
Perform functional check to demonstrate correct operation of machine			

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Skill Check #2	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
1.1 Install and test a solid state relay			
Locate electrical schematic with solid state control relays, output indicators, manual pushbuttons, disconnect switch, and circuit protection			
Obtain components required, identifying solid state relays given specifications			
Install lockout/tagout			
Wire electrical control components given circuit schematic: <ul style="list-style-type: none"> • Interpret solid state relay schematic symbols 			
Test operation of solid state relay with multimeter: <ul style="list-style-type: none"> • Remove lockout/tagout • Test relay output using multimeter 			
1.2 Install, wire and test AC variable frequency drive			
Locate electrical schematic with AC variable frequency drive, 3-phase motor, manual switches, disconnect switch, and circuit protection			
Identify VFD and verify that it is the correct model: <ul style="list-style-type: none"> • Verify nameplate data • Wire for specific voltage specified by schematic 			
Install lockout/tagout			
Wire VFD and other electrical control components given circuit schematic: <ul style="list-style-type: none"> • Wires are proper size, length, color • Wires are properly stripped and run in raceways • Components are correctly connected and wire labels added • Connect grounding ring • Use safety procedures for tightening, disconnecting, or connecting electrical conductors and components 			
Change default parameters to parameters specified using onboard HMI			
Perform functional check			

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Skill Check #2	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
1.3 Install, wire, transfer programs, and test Programmable Controller and HMI			
Locate electrical schematic with PLC, HMI, motor starter, fluid power components, VFD, 3-phase motor, manual switches, disconnect switch, and circuit protection			
Install lockout/tagout			
Install PLC, HMI and other electrical control components given ladder diagram circuit schematic			
Power up system and transfer program to PLC and HMI			
Perform functional check			
1.4 Basic system troubleshooting and adjustment			
Identify any applicable diagram, program and/or I/O diagram with PLC, HMI, actuators, and other I/O devices			
Perform functional check on machine			
Demonstrate ability to make machine adjustments or instruction type, add an additional interlock or output device			
Demonstrate ability to troubleshoot and identify fault(s)			
During troubleshooting process, demonstrate ability to use: <ul style="list-style-type: none"> • Communicate to obtain information about machine • Locate and interpret machine operation history, maintenance logs, and references • HMI as a troubleshooting tool • Troubleshooting flow chart • Systematic troubleshooting methodologies 			
Replace/Repair failed component			
Perform functional check to demonstrate correct operation of machine			

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Skill Check #3	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
1.1 Install and test a solid state relay			
Locate electrical schematic with solid state control relays, output indicators, manual pushbuttons, disconnect switch, and circuit protection			
Obtain components required, identifying solid state relays given specifications			
Install lockout/tagout			
Wire electrical control components given circuit schematic <ul style="list-style-type: none"> • Interpret solid state relay schematic symbols 			
Test operation of solid state relay with multimeter: <ul style="list-style-type: none"> • Remove lockout/tagout • Test relay output using multimeter 			
1.2 Install, wire and test AC variable frequency drive			
Locate electrical schematic with AC variable frequency drive, 3-phase motor, manual switches, disconnect switch, and circuit protection			
Identify VFD and verify that it is the correct model: <ul style="list-style-type: none"> • Verify nameplate data • Wire for specific voltage specified by schematic 			
Install lockout/tagout			
Wire VFD and other electrical control components given circuit schematic: <ul style="list-style-type: none"> • Wires are proper size, length, color • Wires are properly stripped and run in raceways • Components are correctly connected and wire labels added • Connect grounding ring • Use safety procedures for tightening, disconnecting, or connecting electrical conductors and components 			
Change default parameters to parameters specified using onboard HMI			
Perform functional check			

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Skill Check #3	Date Completed	Supervisor's or Trainer's Initials	Candidate's Initials
1.3 Install, wire, transfer programs, and test Programmable Controller and HMI			
Locate electrical schematic with PLC, HMI, motor starter, fluid power components, VFD, 3-phase motor, manual switches, disconnect switch, and circuit protection			
Install lockout/tagout			
Install PLC, HMI and other electrical control components given ladder diagram circuit schematic			
Power up system and transfer program to PLC and HMI			
Perform functional check			
1.4 Basic system troubleshooting and adjustment			
Identify any applicable diagram, program and/or I/O diagram with PLC, HMI, actuators, and other I/O devices			
Perform functional check on machine			
Demonstrate ability to make machine adjustments or instruction type, add an additional interlock or output device			
Demonstrate ability to troubleshoot and identify fault(s)			
During troubleshooting process, demonstrate ability to use: <ul style="list-style-type: none"> • Communicate to obtain information about machine • Locate and interpret machine operation history, maintenance logs, and references • HMI as a troubleshooting tool • Troubleshooting flow chart • Systematic troubleshooting methodologies 			
Replace/Repair failed component			
Perform functional check to demonstrate correct operation of machine			

Affidavit of Successful Completion

NIMS ITM Electronic Control Systems Level I Credentialing Program Credentialing Achievement Record (CAR)

The affidavit must be filled-out in its entirety in order to ensure timely processing.

Candidate Name:	Date Completed:
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The credentialing candidate named above has completed all necessary CAR requirements for NIMS ITM Electronic Control Systems Level I Recognition.

Site Name and Address:

Indicate successful completion of Critical Work Activities & Experiences and Skills Checks, by checking either Yes or No.

Electronic Control Systems Level I		
	Yes	No
Successful completion of Critical Work Activities & Experiences statements have been completed, dated, and co-initialed.	<input type="checkbox"/>	<input type="checkbox"/>
Successful completion of Skill Check #1, all components have been completed, dated, and co-initialed.	<input type="checkbox"/>	<input type="checkbox"/>
Successful completion of Skill Check #2, all components have been completed, dated, and co-initialed.	<input type="checkbox"/>	<input type="checkbox"/>
Successful completion of Skill Check #3, all components have been completed, dated, and co-initialed.	<input type="checkbox"/>	<input type="checkbox"/>

Sponsor Signature Date

Trainer/Supervisor Signature Date

Candidate Signature Date

Make a copy of the completed *Affidavit of Successful Completion* for your records and email the CAR to:

NIMS
10565 Fairfax Boulevard, Suite 10
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support@nims-skills.org