

### Exams on Target for Automation Professionals

By Ellen Fussell

Ron Steel isn't a licensed professional engineer (P.E.). But he has worked most of his career as an automation professional, and he has a degree in electrical and electronics technology. Steel decided to take ISA's Certified Automation Professional (CAP) exam – offered for the first time this past October – just to see what he knew. As senior principle instrument and electrical I&E reliability engineer at SASOL N.A., Baltimore Plant, Steel said taking the exam wasn't really part of his job requirements, but he thought it would “probably give me more recognition from peers.” Plus, he just wanted to see what the people who developed the test had considered, “and to see how I fit in that area.”

Yet Steel wasn't just using the test as an experiment either. “I'm sure it'll give me recognition – and maybe I can do some consulting later,” he said. “I've been working in the field for a long time. I've taken a lot of courses and done a lot of extra work. Besides that it would be a good part of my resume.”

Steel said you don't have to be a P.E. to sit for the test. “That's not one of the requirements. It's either experience or degree or a combination of both,” he said. “Even if you have a degree, you've got to have the experience.” But that doesn't mean that if you are a P.E. you're guaranteed to pass the test, Steel said. “The test is a measure of your experience and knowledge in the field,” he said.

Yet even though he was pretty sure he could pass, Steel said he was impressed with how comprehensive the CAP exam was. “It was what I thought it would be and more,” he said. “I think people will find out where they need to study more or to review and learn more about certain areas of their profession. It covers all kinds of automation areas. It might

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### CAP Job Analysis

The ISA Certified Automation Professional (CAP) exam is designed to assess competence of automation professionals, and a passing score indicates that the CAP has achieved a level of ability consistent with requirements for competence on the job. The job analysis study is an integral part of ensuring that the aspects of industrial automation covered on the exam reflect the tasks performed in the range of practice settings throughout the United States and Canada.

The following is an excerpt from the job analysis study that details the specific tasks and knowledge included in **Domain 1: Feasibility Study**. In the next issue of *CAPacity*, we'll detail Domain 2.

#### Performance Domain I: Feasibility Study

RATINGS

Task	Importance	Criticality	Frequency	% of Items on Test	# of Items on Test
1	2.68	2.18	1.80	1.96%	4
2	2.63	2.13	1.84	1.95%	3
3	2.84	2.37	1.88	2.09%	4
4	2.55	2.24	1.84	1.95%	3
5	2.39	2.00	1.61	1.77%	3
6	2.57	2.11	1.70	1.88%	3
<b>TOTAL</b>				<b>11.60%</b>	<b>20</b>

#### Task 1: Define the preliminary scope through currently established work practices in order to meet the business need.

Knowledge of:

1. Established work practices
2. Basic process and/or equipment
3. Project management methodology
4. Automation opportunity identification techniques (e.g., dynamic performance measures)
5. Control and information technologies (MES) and equipment

Skill in:

1. Automating process and/or equipment
2. Developing value analyses

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**automation** (n) - The implementation of processes by automatic means. **2.** The theory, art, or technique of making a process more automatic. **3.** The investigation, design, development, and application for methods for rendering processes automatic, self-moving, or self-controlling. **4.** The conversion of a procedure, a process, or equipment to automatic operation.

Source: *The Automation, Systems, and Instrumentation Dictionary, 4th Edition* ISA - The Instrumentation, Systems, and Automation Society

let them know if they're weak on fieldbus, control room HMIs, or maybe even in the project management area," he said. "Or maybe it'll reveal what they just need to review."

While Steel didn't pinpoint one topic to study, (all were pertinent to his past experience), he'd recommend people buy the study guide and expand from there. "It covers areas the test will cover, but the test is more in depth," he said. "The study guide is just a guide," he said, with examples of types of questions to expect.

## Job requirements

"Here at the plant site, we want to have certifications for the International Standards Organization (ISO). And since I handle the distributed control

system here, my employer wanted some form of certification," said Robert Morgan, system engineer at Jayhawk Fine Chemicals (a subsidiary of Degussa Corp.) in Galena, Kansas. Morgan has a mechanical engineering background, and he said taking the exam was "part and parcel to help me keep my job," he said. Morgan feels confident about having taken the exam, especially if downsizing occurs at his company. Then certainly I'd look at it as allowing me to get employment in the same field," he said.

But will taking the exam boost an already thriving career? Morgan thinks it will in his case. "It'll help my career because it's a career change for me," he said. "There's more mechanical work on my resume than control work and DCS work. So taking this exam is adding to the DCS experience. I've been in the consulting business and working for chemical plants for 30 years, and the first 20 are more mechanical and project oriented. So I have ten specifically in control."

Morgan said he'd recommend others take the CAP exam just to show they've reached a standard level of automation expertise. "If they should ever apply it elsewhere or our company should want to hire someone, they would be looking for this sort of certification," he said. "I think there's a potential it'll be required in the future. In fact, more people here are thinking of taking it now that I've taken it."

And while Steel didn't actually need the test to keep his job, he also believes knowing what the test is and being able to get a passing grade will give anyone in the field professional recognition – proving they have the abilities required to do control system work. "For me personally, it's more personal satisfaction that I could pass it," he said. "But for younger people looking to enhance their career, it's a good feather in their cap."

"I think there's a potential it'll be required in the future."

## Task 2: Determine the degree of automation required through cost/benefit analysis in order to meet the business need.

### Knowledge of:

1. Various degrees of automation
2. Various cost/benefit tools
3. Control and information technologies (MES) and equipment
4. Information technology and equipment

### Skill in:

1. Analyzing cost versus benefit (e.g., life cycle analysis)
2. Choosing the degree of automation
3. Estimating the cost of control equipment and software

## Task 3: Develop a preliminary automation strategy that matches the degree of automation required by considering an array of options and selecting the most reasonable option in order to prepare feasibility estimates.

### Knowledge of:

1. Control strategies
2. Principles of measurement
3. Electrical components
4. Control components
5. Various degrees of automation

### Skill in:

1. Evaluating different control strategies
2. Selecting appropriate measurements
3. Selecting appropriate components
4. Articulating concepts

## Task 4: Conduct technical studies for the preliminary automation strategy by gathering data and conducting an appropriate analysis relative to requirements in order to define development needs and risks.

### Knowledge of:

1. Process control theories
2. Machine control theories and mechatronics
3. Risk assessment techniques

### Skill in:

1. Conducting technical studies
2. Conducting risk analyses
3. Defining primary control strategies

## Task 5: Perform a justification analysis by generating a feasibility cost estimate and using an accepted financial model to determine project viability.

### Knowledge of:

1. Financial models (e.g., ROI, NPV)
2. Business drivers
3. Costs of control equipment
4. Estimating techniques

### Skill in:

1. Estimating the cost of the system
2. Running the financial model
3. Evaluating the results of the financial analysis for the automation portion of the project

## Task 6: Create a conceptual summary document by reporting preliminary decisions and assumptions in order to facilitate "go"/"no go" decision making.

### Knowledge of:

1. Conceptual summary outlines

### Skill in:

1. Writing in a technical and effective manner
2. Compiling and summarizing information efficiently
3. Presenting information

**ISA Members can download the complete job analysis for free at [www.isa.org/CAP](http://www.isa.org/CAP)**

# Verification of Employment FAQs

Each issue we'll provide answers to some of the most commonly asked questions about an aspect of the CAP program. This issue focuses on the Verification of Employment aspect of the application process.

## **?** Do all of the Verification of Employment forms have to be submitted with my application or can I mail them separately in order to meet the Application Deadline?

All documentation must be received with the initial application. If ISA receives an application that does not meet the requirements, you will be notified and will only be rescheduled when you provide complete verification and select a new exam date within six months of the original date.

## **?** How do I get verification of my previous employment?

You must contact previous supervisors and have them sign the Verification of Employment form for that particular period of employment. This form is provided in the CAP application. It can be copied as many times as needed to have one for each employer.

Information needed to process the form includes your name, title, location of employment, name of company, dates of employment, description of work activities, and your supervisor's signature.

To meet the requirements for CAP, the entire period must be documented by signed Verification of Employment forms. ISA will not send these documents to previous employers. It is your responsibility as an applicant to submit all of the necessary documentation.

## **?** What if a previous employer is no longer in business or my former supervisor cannot be located? How do I verify this period of employment?

A colleague can verify this period of employment by signing the Verification of Employment form in the presence of a Notary Public.

## **?** What if I cannot locate anyone to verify a period of employment?

To apply for certification, you must document the entire period necessary to fulfill the requirement. If you cannot fully document the years, then you must postpone your application.

## Tell Us Your Story

Sharing your story with non-certified automation professionals is the best way to increase the recognition and strength of the ISA CAP program. We'd like to help you tell your story. Fax (919-549-8288) or e-mail (CAP@isa.org) us your answers to the following questions.

### Has being an ISA CAP helped you:

- get a raise?
- be more valuable to your employer?
- get a better job?
- get a promotion?
- save the company money?
- feel better about your profession?
- bring in new business for the company?

### Can we highlight you as "CAP of the Month" in a future newsletter?

- Sure.
- Maybe, tell me more about it.
- No, thanks.

Name: \_\_\_\_\_

Certification No.: \_\_\_\_\_

Company: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

# Current CAPs

Congratulations to these ISA CAPs!

## Delaware

Nicholas P. Sands  
Newark, DE  
Expiration: 15 December 2007

## Kansas

Robert G. Morgan  
Galena, KS  
Expiration: 15 October 2007

## Illinois

Paul J. Galeski  
Columbia, IL  
Expiration: 15 October 2007

James E. Hennke

Burr Ridge, IL  
Expiration: 15 December 2007

Jeff Putnam, IV

Columbia, IL  
Expiration: 15 December 2007

## Indiana

David J. Adler  
Indianapolis, IN  
Expiration: 15 January 2008

Gerald W. Cockrell  
Terre Haute, IN  
Expiration: 15 October 2007

## Maryland

Ronald L. Steel  
Baltimore, MD  
Expiration: 15 October 2007

## Michigan

George A. Skene  
Walled Lake, MI  
Expiration: 15 October 2007

## Minnesota

Brent W. Carlson  
Saint Paul, MN  
Expiration: 15 December 2007

## Missouri

Douglas A. Foushee  
St. Louis, MO  
Expiration: 15 October 2007

Sean M. Griffin

Saint Louis, MO  
Expiration: 15 December 2007

Joseph A. Ruder

Labadie, MO  
Expiration: 15 October 2007

Kelly P. White  
Saint Louis, MO  
Expiration: 15 December 2007

## New Jersey

Carl T. Wilder  
Belvidere, NJ  
Expiration: 15 December 2007

## New York

Richard T. Arvidson  
Farmington, NY  
Expiration: 15 December 2007

Bernard H. Fingar, Jr.  
Rochester, NY  
Expiration: 15 October 2007

Donald A. Frelier  
Rochester, NY  
Expiration: 15 October 2007

Elmer M. Kiessel  
Rochester, NY  
Expiration: 15 October 2007

## Ohio

Lee A. Lane  
Brunswick, OH  
Expiration: 15 October 2007

Arthur P. Pietrzyk  
Mayfield Heights, OH  
Expiration: 15 October 2007

## Texas

Henrik V. Christiansen  
Beaumont, TX  
Expiration: 15 December 2007

Gregory K. McMillan  
Austin, TX  
Expiration: 15 December 2007

Robert Scott Sifford  
Bellville, TX  
Expiration: 15 October 2007

Christopher M. Stephens  
Houston, TX  
Expiration: 15 January 2008

## Alberta, Canada

Gavin B. Jacobs  
Calgary, AB  
Expiration: 15 December 2007

## Dated Material—Open Immediately!

**Please share this publication with others in your company:**

- Automation Engineer
- Plant Manager
- Control Systems Engineer
- Systems Integrator

### 2005 ISA Certification Exam Locations and Dates

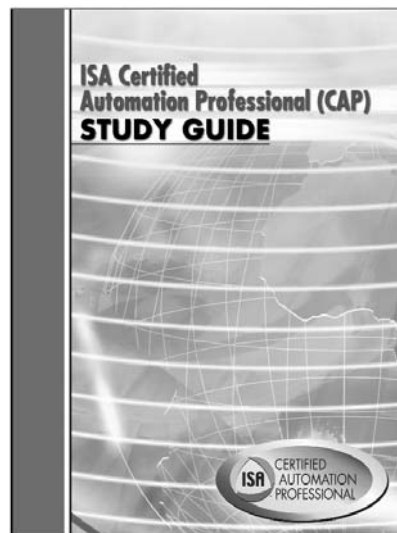
ISA Certification are scheduled four times a year at selected test sites. Additional dates in conjunction with special conferences or training programs may also be announced.

Test Date	Application Deadline
16 July 2005	3 June 2005
8 October 2005	26 August 2005
10 December 2005	28 October 2005
Special Offering in Chicago, IL In conjunction with ISA EXPO 2005 	
27 October 2005	16 September 2005

The exam can also be scheduled for a private date at your location if you have 4 or more people who want to test. Contact ISA at (919) 549-8411 for more information.

## Get Ready for the CAP Exam

The CAP Study Guide is a comprehensive self-study resource for the Certified Automation Professional (CAP) Certification Exam. The Study Guide contains a list of the CAP domains and tasks, 50 review questions and answers, complete with justifications. The references that were used for each study guide question are also provided with the question. The Study Guide also includes a recommended list of



publications that you can use to do further study on specific domains. The study guide is recommended as a prerequisite to taking the CAP exam. **Purchase your copy online at [www.isa.org/CAP](http://www.isa.org/CAP) or call (919) 549-8411.**