



Sigma Reliability  
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# Sigma Reliability Solutions, LLC Plant Skills™ Training Series

CMRP Certification Review  
Drew Troyer, MBA, CRE, CRMP

## Maintenance & Reliability Review - The SMRP Body of Knowledge

If you're a professional working in the field of plant and equipment maintenance and reliability, you need this course. The Society for Maintenance & Reliability Professionals (SMRP) has formalized and standardized the "Body of Knowledge" - or "BOK" - that you need to know to function effectively as a maintenance & reliability professional. They've built the course around five knowledge "pillars."



If you're seeking certification by SMRP as a Certified Maintenance & Reliability Professional (CMRP), this course offers a solid review of the material in the BOK on which you'll be tested by the exam. The CMRP exam is an experience-based exam – it's tough to pass by just taking a class. You have to put in the years. SMRP doesn't have any education, experience or other qualification requirements to sit for the exam. However, if you're experienced, this review course will help you "sharpen the saw" before the examination and tighten up some weak areas – particularly in the business and finance area where many Maintenance & Reliability Professionals struggle. If you desire, the exam can be proctored in conjunction with the delivery of the course.

## Five Pillars of Maintenance and Reliability

### Pillar 1 – Business and Management

This subject area describes the skills used to translate an organization's business goals into appropriate maintenance and reliability goals that support and contribute to the organization's business results.

- 1.1. Create strategic direction and plan for Maintenance and Reliability operations (provide vision, provide clear and measurable goals, develop business case, etc.)
- 1.2. Administer strategic plan (develop support, prepare budgets, obtain approval and resources, implement plan, etc.)
- 1.3. Measure performance (select key performance indicators, track and report, etc.)
- 1.4. Manage organizational changes (develop change management process, communicate benefits, etc.)
- 1.5. Communicate with Stakeholders (provide management reports, inform staff, coordinate with operations, etc.)
- 1.6. Manage environmental-health-safety risk (support company EHS and security goals, confirm to applicable regulations, provide EHS training, etc.)

### Pillar 2 – Manufacturing Process Reliability

This subject area relates maintenance and reliability activities to the manufacturing or production process of the organization to ensure that maintenance and reliability activities improve the manufacturing or production process.

- 2.1. Understand the applicable processes (document process flow, understand process parameters, understand quality specifications, etc.)
- 2.2. Apply process improvement techniques (identify production losses; establish continuous improvement process, etc.)
- 2.3. Manage effects of change to processes and equipment (establish change protocol, update documentation and procedures, etc.)
- 2.4. Maintain processes in accordance with applicable standards and regulations (understand industry standards, understand regulatory requirements, ensure compliance, etc.)

### Pillar 3 – Equipment Reliability

This subject area describes two kinds of activities that apply to the equipment and processes for which the maintenance and reliability professional is accountable. First are those activities used to assess the current capabilities of the equipment and processes in terms of their reliability, availability, maintainability, and criticality. Second are the activities used to select and apply the most appropriate maintenance practices, so that the equipment and processes continue to deliver their intended capabilities in the safest and most cost-effective manner.

- 3.1 Determine equipment reliability expectations (identify reliability goals, identify process expectations, etc.)
- 3.2 Evaluate equipment reliability and identify improvement opportunities (measure and track performance, determine best demonstrated performance, analyze gaps, etc.)
- 3.3 Establish a strategic plan to assure reliability of existing equipment (identify appropriate analysis techniques, develop maintenance strategy and tactics, etc.)
- 3.4 Establish a strategic plan to assure reliability of new equipment (establish reliability specifications and acceptance criteria, obtain complete documentation, etc.)
- 3.5 Cost-justify selected plans for implementation (conduct cost-benefit analysis, communicate benefits, obtain approval, etc.)
- 3.6 Implement selected plans to assure equipment reliability (apply reliability strategies, establish organizational structure, provide resources, etc.)
- 3.7 Review reliability of equipment and adjust reliability strategy (assess key performance indicators, analyze deviations, identify relevant best practices, implement continuous improvement, etc.)

### Pillar 4- Leadership and Organization

This subject area describes processes for assuring that the maintenance and reliability staff is the most qualified and best assigned to achieve the maintenance and reliability organization goals.

- 4.1 Determine organizational requirements (review strategic plan, determine required skills and staffing levels, etc.)
- 4.2 Analyze organizational capability (inventory staff skills, determine performance gaps, etc.)
- 4.3 Develop the organization structure (establish reporting channels, determine roles and responsibilities, manage reorganization, etc.)
- 4.4 Develop personnel (provide training, hire needed expertise, delineate career paths, etc.)
- 4.5 Lead and manage people (develop leadership skills, assess performance, promote cooperative work environment, facilitate communication, etc.)

## Pillar 5 – Work Management

This subject area focuses on the skills used to get the maintenance and reliability work done. It includes scheduling and planning activities, quality assurance of maintenance activities, stores and inventory management.

- 5.1 Identify, validate and approve work (establish work identification processes, select and approve viable work, etc.)
- 5.2 Prioritize work (develop and implement formal prioritization system, etc.)
- 5.3 Plan work (develop job package including scope, procedures, references, materials, tools, testing, etc.)
- 5.4 Schedule work (develop scheduling process, produce work schedules, balance resources, monitor backlog, manage break-in work, coordinate equipment access, etc.)
- 5.5 Execute work (manage labor, material, and services; control productivity, ensure HSE compliance, etc.)
- 5.6 Document work (create post-work documentation process, record failure events, etc.)
- 5.7 Analyze work and follow-up (compare actual work plan, identify variances, etc.)
- 5.8 Measure work management performance (establish performance indicators, report schedule compliance and rework, etc.)
- 5.9 Plan and execute projects (define scope, estimate project and life cycle costs, apply critical path methods, track progress, coordinate staffing, etc.)
- 5.10 Use information technologies effectively (leverage capabilities of data historian, process control systems, condition monitoring software, EAM/CMMS, etc.)
- 5.11 Manage resources and materials (control materials inventory, manage spares and equipment, establish MRO procurement process, manage contractors, etc.)

## Options for Course Delivery:

1. **Live – One event.** Four days of training with an optional fifth day to proctor the CMRP examination.  
Cost is \$3,000/day for training and \$1,500/day for organizing and administering exam on the optional Day 5.  
Fees provide materials for up to 25 students. Additional students are welcome to participate at the special rate of \$250/per person. Price excludes travel and expenses.
2. **Live – Five events.** Each Level is a separate 1-Day event. The fifth event can optionally be extended to two days to proctor the CMRP exam.  
Cost is \$3,500/day for training and \$1,500/day for organizing and administering exam on the optional Day 5.  
Fees provide materials for up to 25 students. Additional students are welcome to participate at the special rate of \$250/per person. Price excludes travel and expenses per event.
  - Level 1 - Business and Management
  - Level 2 - Manufacturing Process Reliability
  - Level 3 - Equipment Reliability
  - Level 4 - People Skills
  - Level 5 - Work Management
3. **Live Webinar** – Some prefer to bring a group together virtually. For those clients, we deliver the course broken into 20 two hour segments that are delivered live via go-to-meeting events. With an optional day on-site to proctor the exam. Alternatively, SMRP offers an electronic option for taking the exam.  
Cost is \$700 per 2-Hour Segment and includes materials for up to 25 students. Additional students are welcome to participate at the special rate of \$250/per person. Cost for On-site Exam Proctoring is \$1,500 – Price excludes travel and expenses.

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## About Your Instructor:

This course is taught exclusively by Drew D. Troyer, CRE, CMRP – a globally known expert on Maintenance & Reliability engineering and management, award winning author, trusted advisor to Fortune 500 companies around the world and a popular keynote speaker. Drew holds the Certified Reliability Engineer (CRE), Certified Maintenance & Reliability Professional (CMRP) and MBA qualifications to go along with 20 years in the trenches. Drew speaks on business and technology equally well and receives accolades for his easy style, clear communication and ability to get the point across.



## What they are saying about Drew Troyer's approach to Reliability and Maintenance:

"This is an excellent overview of the concepts of successful reliability processes that all facility management should be exposed to."

John Cattuna, Jr., Maintenance Manger – BASF Corporation

"Seminar is packed with information from all angles of Reliability Management. The practical discussion hit home with my organization. The information covered was well-packed and never a dull moment. This was the best seminar I have attended in my years."

Jeff Crim, Cypress Plant Manager – Milliken & Co.

"This seminar will enable me to set and communicate the vision of what RCM activities we need."

Rick Larson, Facility Manager – Aramark, Corp.

"Excellent seminar! The material presented will help us solidify our continuous improvement journey by translating reliability efforts into senior leadership language (money)."

Randy Woolley, Manager Asset Management – Kennecott Utah Copper Corp.

"Our clients can benefit from the information in this course by fewer insurance claims on mechanical, electrical and production machines thereby yielding higher profits. Drew's Strategic Plant Reliability Management approach will make them more competitive and ultimately an industry leader."

Martin Powers, Risk Control Director – CNA Insurance Co.

"This seminar could not only transform our plant and company but could change American manufacturing as a whole for future generations."

Rod Chandler, Production Manager, Temple-Inland



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Schedule Your Business Transforming Event Today!  
Contact Stacey McCauley for Availability:  
Stacey.McCauley@Sigma-Reliability.com  
(662) 890-9392 (o) / (901) 387-9974 (m)



Schedule Your CMRP Certification Exam:  
[http://www.smrp.org/SMRP\\_certification/](http://www.smrp.org/SMRP_certification/)