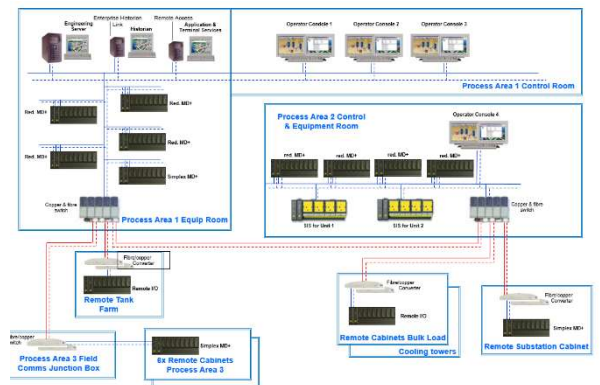


# Computer and Control System Hazard and Operability Reviews



## CHAZOP Leader Training



**Live – Online**

**Small group.**

**Held over four, 4-hour sessions June 16, 17, 23 and 24**

JBL Consulting Pty. Ltd.  
59 Annandale St  
Annandale NSW 2038  
Telephone 0412 395 078  
John.Lear@jblconsulting.com.au  
ABN 95 602 799 459

**JBL**  
Consulting

## The Need for CHAZOP

Since the early 1980s, there has been a continuing trend in the process industry on both batch and continuous plants to replace manual operations by automation, to centralise control rooms and to replace mimic and panel board representations with shared display screens. Hard wired relay systems for interlock and trip functions and older PLC-based interlock trip systems have been replaced by special purpose programmable safety systems. The use of programmable electronic instrument and control systems (sometimes called PES for Programmable Electronic Systems) for these functions has now become standard in the process industry. These systems include Distributed Control Systems (DCS), Programmable Logic Controllers (PLCs), Supervisory Control and Data Acquisition (SCADA) systems and Safety Instrumented Systems (SIS) designed and implemented to conform with IEC61508 and IEC61511.

The trend to control systems possessing greater flexibility and power is accelerating with the integration of modern IT infrastructure and networking technologies (e.g. Industrial Ethernet). This is in addition to a range of other networking technologies such as IEC 61158 fieldbus communications protocols including Foundation Fieldbus, Profibus and ControlNet between field instruments and the PES. Field devices (e.g. instruments, valves and drives) are becoming more computationally powerful - highly programmable, powerful and “smart”. The operator interface and associated support equipment (e.g. engineering stations, historians, network management) are increasingly Windows-based computers.

It has become apparent, often through bitter experience, that the control design intention is not only difficult to specify unambiguously, but can be thwarted by the failure of the system in ways which were previously not possible with simpler control structures, such as discrete panel-based controllers or hard-wired relay systems. Major disasters such as Longford (1998), Texas City (2005) and Buncefield (2005) were all at least partly caused by control system problems.

## The CHAZOP Technique

Building on the successful HAZOP technique, which has been used since the 1970s to improve the safe operation of chemical plants, CHAZOP provides a systematic, multi-disciplinary technique to improve the safety and operability of computer based control systems. The presenter co-developed this CHAZOP technique with Dr Brian Dale while working with ICI and Orica.

Four techniques are presented:

The Preliminary CHAZOP—carried out prior to detailed design to ensure the specification will meet the User’s requirements.

The System CHAZOP—provides a review of the “Control System”, including the network, electrical supply, I/O, hardware, internal and external data and network connections, environmental factors and security.

The Loop CHAZOP—reviews loop functionality such as continuous and on/off control, open/close valve operations, and motor start and stop, confirming the design intent and investigating the impact of failures on safe operation.

The Sequence CHAZOP—is a technique for reviewing “sequential control”, such as start-ups, shutdowns, batch processes, time based operation and similar logic.

## The Course

Over the four sessions, the course provides the students with an in-depth background to CHAZOP, skills on successfully preparing for a CHAZOP and leading the CHAZOP sessions. Hands-on group exercises build skills, such that on successful completion the students will be able to begin leading CHAZOPs. The course is based on the successful ICI / ORICA CHAZOP Leaders course that has trained dozens of CHAZOP leaders.

<b>Aim:</b>	To provide participants with the skills needed to lead successful Computer and Control Hazard and Operability Studies.
<b>Who should attend:</b>	Experienced control system engineers (control, process, instrument or electrical) who have had several years of practical experience in implementing, operating and modifying modern electronic control and/or protective systems (application software and system hardware). Prior completion of the HAZOP Leader course and/or equivalent experience in leading HAZOP studies is preferred; however significant practical experience in HAZOP studies will assist.
<b>How will they benefit:</b>	On completion of this course, participants will have sufficient understanding of, and some practice with, CHAZOP methodology to form the basis for leading CHAZOP studies within their local business environment. They will receive copies of generic CHAZOP guide words needed for the main types of CHAZOP. Following the course, participants would normally develop their expertise further by being mentored by an experienced CHAZOP practitioner.
<b>Content and Structure:</b>	Need for CHAZOP studies Different types of CHAZOP studies Preparation for CHAZOP studies Use of different guide words CHAZOP team leadership skills Preparation and use of proformas Conduct of a study Minutes and actions

<b>Course Cost:</b>	<b>Cost per person: \$2500 (+GST)</b>
<b>Duration:</b>	<b>There will be <u>four</u>, 4-hour sessions</b>
<b>Date:</b>	<b>Sessions on June 16, 17, 23 and 24</b>
<b>Time:</b>	<b>Each session will be from 11am to 3pm AEST</b>
<b>Location:</b>	<b>Live, online</b>

### **About the Course Facilitator**

#### **Dr John Lear**

FIEAust, FIChemE, CPEng, RPEQ, FS Eng

John has over 40 years' experience in process plant design, operation, R&D and technology management.

In conjunction with Dr Brian Dale, John developed the CHAZOP technique to the full suite of reviews that are presented in this course. John has led over one hundred CHAZOPs, ranging from chemical plant operation, through IT infrastructure to robotic control.

John is a highly regarded presenter and draws on his broad experience throughout the course.

**Registration Form**

To register, please fill in this form and send to [John.Lear@jblconsulting.com.au](mailto:John.Lear@jblconsulting.com.au)

**Name**  

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**Company**  

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**Street address**  

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**Suburb/Town**  

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**State****Postcode**  

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**Phone****Email**  

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The course fee is \$2,500 (+GST).

**An invoice will be forwarded upon receipt of Registration. Payment will be accepted by Bank Transfer, Debit or Credit Card**

<b>Cancellation:</b>	<i>Up to three weeks before the course date:</i>	<i>100% refund</i>
	<i>Between three and one weeks before the course date:</i>	<i>50% refund</i>
	<i>After one week before the course date:</i>	<i>no refund</i>

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