

API RBI Project Background and History

API RBI User Group Update

October 4-5, 2006

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API RBI Project

- Project Purpose: Develop practical methods for Risk Based Inspection
- Objective: Develop a Base Resource Document (BRD) outlining a Risk-Based Inspection Methodology aimed at inspectors and plant engineers experienced in the inspection and design of pressure-containing equipment.
- The practical uses of the RBI program were:
 - To allow management to review safety, environmental and business-interruption risks in an integrated, cost-effective manner;
 - To systematically reduce the likelihood of failures by making better use of the inspection resources; and
 - To identify areas of high consequence that can be used for plant modifications to reduce risk
- Project initiated May 1993 with 16 sponsors

Original API RBI Sponsor Group Companies - 16

Amoco	Conoco	Phillips
Arco	Exxon	Shell
Ashland	Koch	Sunoco
BP	Marathon	Texaco
Chevron	Mobil	Unocal
Citgo		

Original API RBI Sponsor Group Companies – Today (10)

Ashland Chemicals	ConocoPhillips	Marathon
BP	ExxonMobil	Shell
Chevron	FHR (Koch)	Sunoco
Citgo		

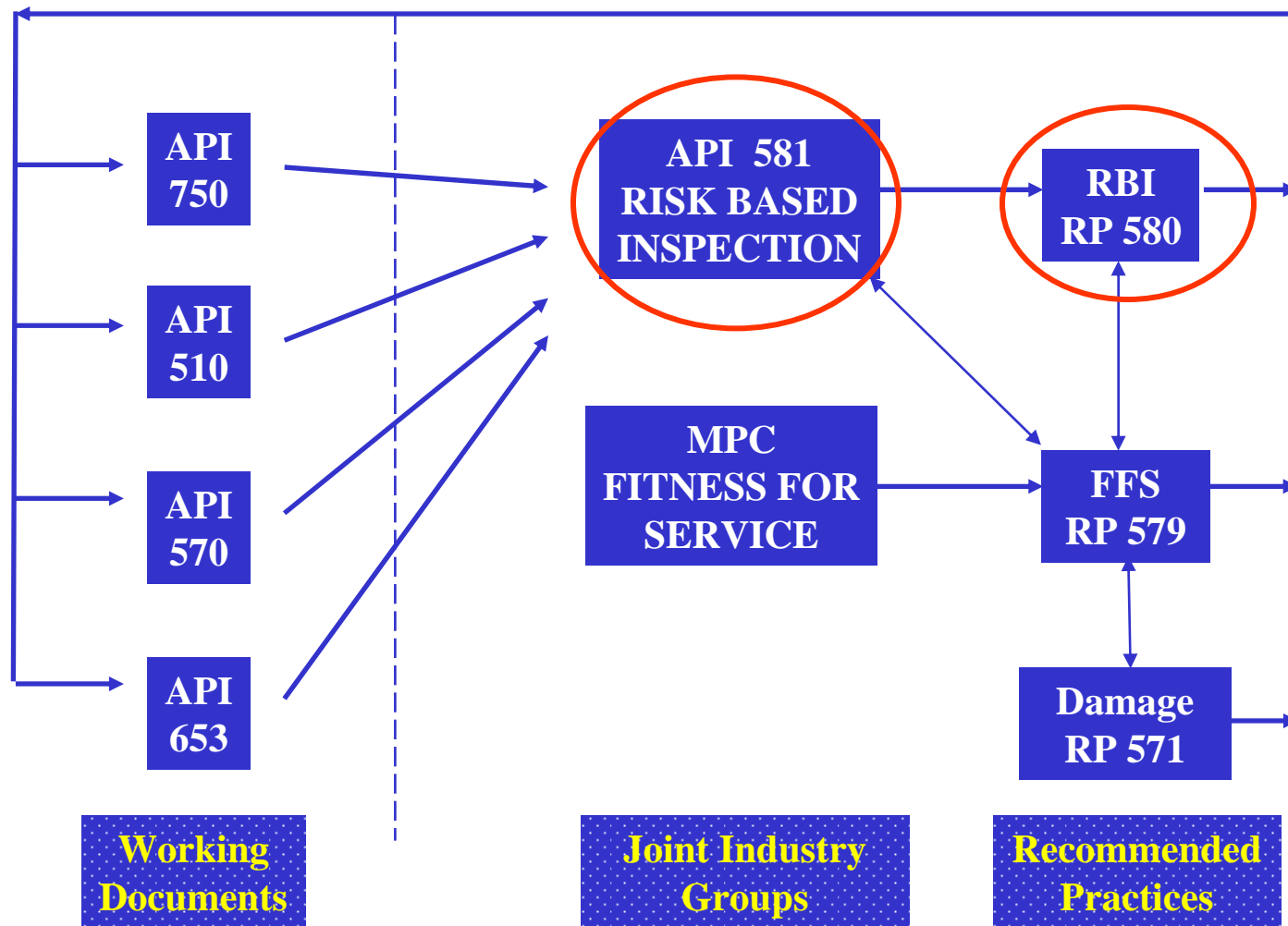
Additional Sponsor Group Companies

Dow Chemical	Fina
DSM Services	Petro-Canada
DNO Heather	Saudi Aramco
Equistar	

Relationship with Other Documents

- Interaction between RBI and other existing and developing API documents. API RP 750, *Management of Process Hazards*, provides a comprehensive definition of an effective process safety management system. Among other things, it requires use of process hazard analyses, compilation of mechanical and operating records and procedures, and implementation of an effective equipment inspection program.
- RP 750 is shown as the umbrella policy under which existing inspection codes operate and new procedures are being developed.
- The relationship between RBI and other developing procedures is illustrated by the interaction between the Base Resource Document (BRD) and the Material Properties Council (MPC).
- API and MPC are nearing completion of API Recommended Practice 579, *Fitness-For-Service*. This and other developing procedures will also be integrated into existing procedures, where appropriate.

Relationship Between API Documents



API RBI Project Phases

- **Phase I** deliverables (complete May 1995)
 - Initial Base Resource Document (BRD)
 - Pilot study applications
- **Phase II** deliverables (complete Oct. 1997)
 - Level I and II software development
 - Technology enhancements / expansion
- **Phase III** deliverables (complete Jan. 1999)
 - Software completion / integration
 - Further technology enhancements
- **Phase IV** (Start June 2000)
 - Creation of User Group (from technology development)
 - Evaluation of results and practical applications
 - Platform change software development project
- **Current Phase** (start Oct. 2001)
 - Continue technology development
 - Platform change software development project
 - + Enhancements to current approaches
 - + Modernizing technology
 - + Adding capabilities (new equipment, additional corrosion supplements)

Objective of API RBI Project

- Revised Project Objective Jan. 1997
- Create an RBI **Methodology** for the Petroleum and Petrochemical Industry along with a User-Friendly **Software** package that includes **RBI Analysis**. The software will come complete with **User Manuals, Technical Manuals, and Training** for implementation by Sponsor Group Members.

Current Phase

- E²G took over management of the User Group project in Oct. 2001
- Market and Training of RBI in the US and internationally
- Update Software tool
 - Upgrade V3 Access 97 based tool developed in 1998
 - Reduce Microsoft system dependencies
 - Modernize technology
 - Improve development, testing and distribution time
- Technology Improvements
 - Added damage modules and equipment modules
 - Ongoing review and improvements of damage modules
 - Consistency with API standards/publications such as 579 and 571
 - Broaden technology and terminology to include chemical industry

API RBI User Group – Oct. 2001

ADGAS	Dow	Petro-Canada
BP	DSM Services	Saudi Aramco
Conoco	Flint Hills Resources	Shell GS
Chevron	Lyondell Chemical	Sunoco
Chinese Petroleum	MarathonAshland	Syncrude
Phillips	PDVSA	Total Petrochemicals

New UG Members Since Oct. 2001

Amerada Hess	Italian Welding Inst.	Placid Refining
Berwanger	JGC Plantech	Portuguese Welding
DNV	Lloyds Register	Repsol-YPF
Duke Energy	Pasadena Refining	Suncor
Ineos	Petrobras	Valero
Irving Oil		

- Pending licenses/interest
 - Bayer Chemicals
 - Methanex
 - Praxair
- Chevron Phillips Chemicals – membership through ownership by Chevron and Phillips
- Ashland Chemicals – membership through split with Ashland refining
- Invista, Georgia Pacific – membership through ownership by Koch Ind.

API RBI User Group - Current

ADGAS	Ineos	Petro-Canada
Amerada Hess	Irving Oil	Placid Refining
Ashland Chemical	Italian Welding Inst.	Repsol-YPF
BP	JGC Plantech	Saudi Aramco
Berwanger	Lloyds Register	Shell Global
Chevron	Lyondell Chemical	Suncor
ConocoPhillips	Marathon	Sunoco
DNV	PDVSA	Total Petrochemicals
Dow	Pasadena Refining	Valero
Duke Energy	Petrobras	
Flint Hills Resources	Portuguese Welding	

API RBI Project

- Project Purpose: Develop practical methods for Risk Based Inspection (1993)
- Objective: Develop a Base Resource Document (BRD) outlining a Risk-Based Inspection Methodology aimed at inspectors and plant engineers experienced in the inspection and design of pressure-containing equipment
- Interaction between other API activities including API 510, 570, 579, 653 and 750
- Revised Project Objective Jan. 1997:
Create an RBI **Methodology** for the Petroleum and Petrochemical Industry along with a User-Friendly **Software** package that includes **RBI Analysis**. The software will come complete with **User Manuals, Technical Manuals, and Training** for implementation by Sponsor Group Members.

Background Summary

- Original sponsors were refining based companies
- Sponsor and User Group membership expanded into Chemicals, Production/Gas Plant facilities and consulting/service companies
- International membership and exposure has increased significantly since 2001
- Original and revised Objectives have been accomplished
- New objectives need to be set to assure continued progress and a common understanding of the project goals
- Pricing needs to be reviewed and adjusted