



ABB LIMITED

Planning for Decommissioning

A demolition mans point of view

Steve Andrew - Head of Late Life, Decommissioning and Demolition



Introduction

Steve Andrew

- Lead ABB's core Late Life, Decommissioning & Demolition Team
- 40 years industry experience
- Responsibilities for the preparation and planning of decommissioning and demolition projects and typically being lead representative of the CDM Principal Designer and Demolition technical advisor
- Member of the institute of demolition engineers and incorporated member of the Association of Project Safety (Principal Designer)
- Recent events reinforce the importance of events like this to share learning and experiences
- Today's presentation to share experiences – **the ten things I wish I had known when I started!!**

ABB Services in this area

- Project management across full project lifecycle
- CDM preparedness (UK Decommissioning)
- Safety / health and environmental management
- Decontamination / decommissioning / mothballing
- Asset inventory Assessment
- Hazdem / Hazid / Envid – Pre Dismantlement
- Asset reuse and relocation
- Design reroutes / isolations of services (electrical, instrument and mechanical)
- Structural studies to ascertain safe methods of dismantling and demolition
- Procurement and contract management
- Site divestment services



What is decommissioning

Myths and legends

Different things to different people depending on industry



The ten things I wish I had known!

One - Decommissioning is only Construction in reverse?

Construction

- New equipment
- Confidence in construction
- Laydown area
- Status of isolation
- Design / information

Known

Decommissioning

- Restricted access / live equipment
- Condition of equipment / structures
- Other peoples bad practice
- Vessel weights / lifting equipment
- Residues materials
- Insulation
- Isolation / stored energy
- Information provided

Unknown condition = Hazards and risks

The ten things I wish I had known!

Two - Perception that all sectors are different – Consequence of getting it wrong?

Issues	Onshore	Offshore	Nuclear	Maritime
High Hazard Processes	Y	Y	Y	Y
Hazardous Residues / Raw Materials	Y	Y	Y	Y
Hazardous Insulating Residues (Asbestos)	Y	Y	Y	Y
Radio-Active Substance (NORM)	Y	Y	Y	Y
Large Unique Structures	Y	Y	Y	Y
Tanks, Pipes & Vessels	Y	Y	Y	Y
Strict Regulatory Regime	Y	Y	Y	Y
Environmental Receptors	Y	Y	Y	Y
Deep Water	Y	Y	Y	Y
Difficult Access	Y	Y	Y	Y
Reputation / Stakeholder Management	Y	Y	Y	Y

The ten things I wish I had known!

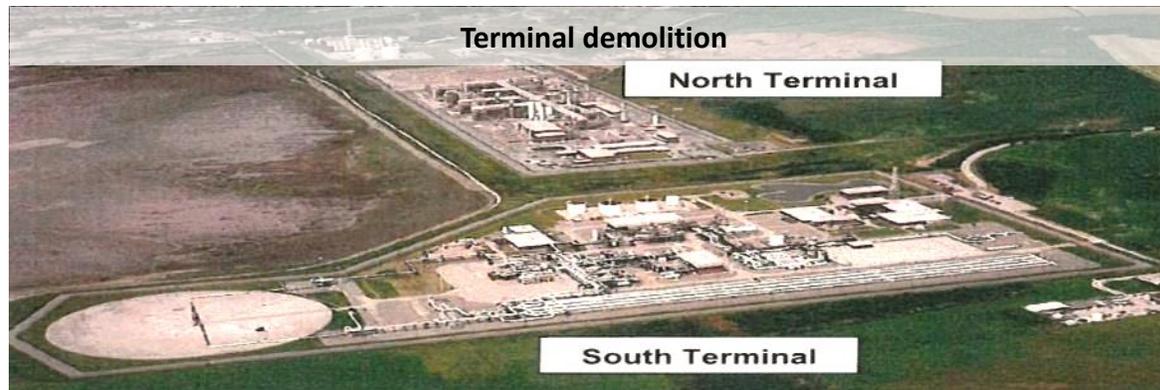
Three – This is new and never been done before



1,2,3 Ammonia
Octal Phenol Live plant Asbestos / radio-active catalyst
Oil and Gas Plants Asbestos removal / catalyst recovery
Phenol Plant Demolition Major asbestos removal / contamination
Urea 5 Lift and shift
Storage

The ten things I wish I had known!

Three – This is new and never been done before



LNG Tanks

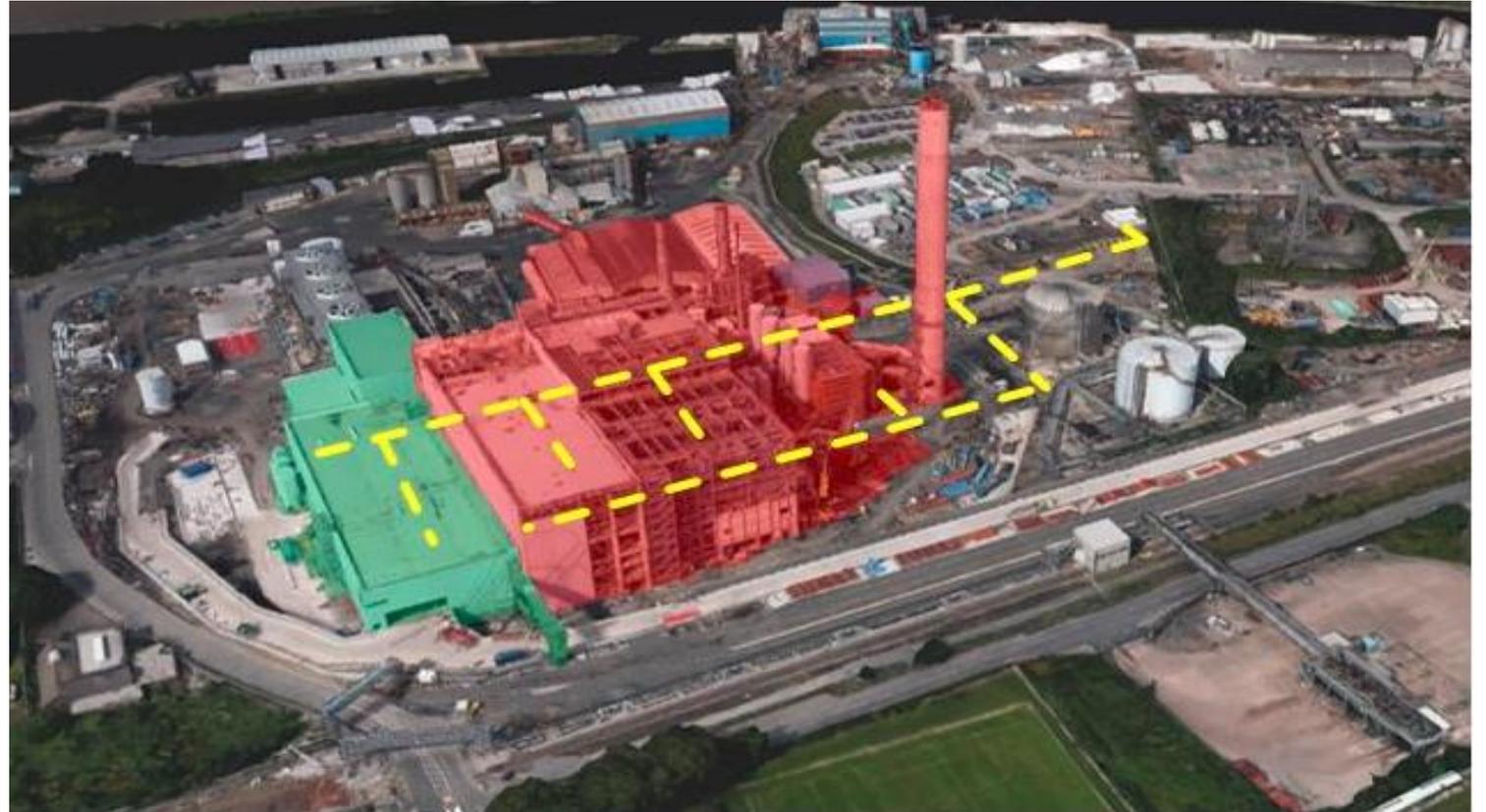
The ten things I wish I had known!

Four – Design for decommissioning/derisking

Issues

- Working in and around live plant
 - Risk to people
 - Environment
 - Operations - business interruption
- Hands on methodology
- Interfaces with live operations
- On going maintenance costs

- Live areas
- Redundant plant and equipment areas
- Live Services



The ten things I wish I had known!

Four – Design for decommissioning/derisking

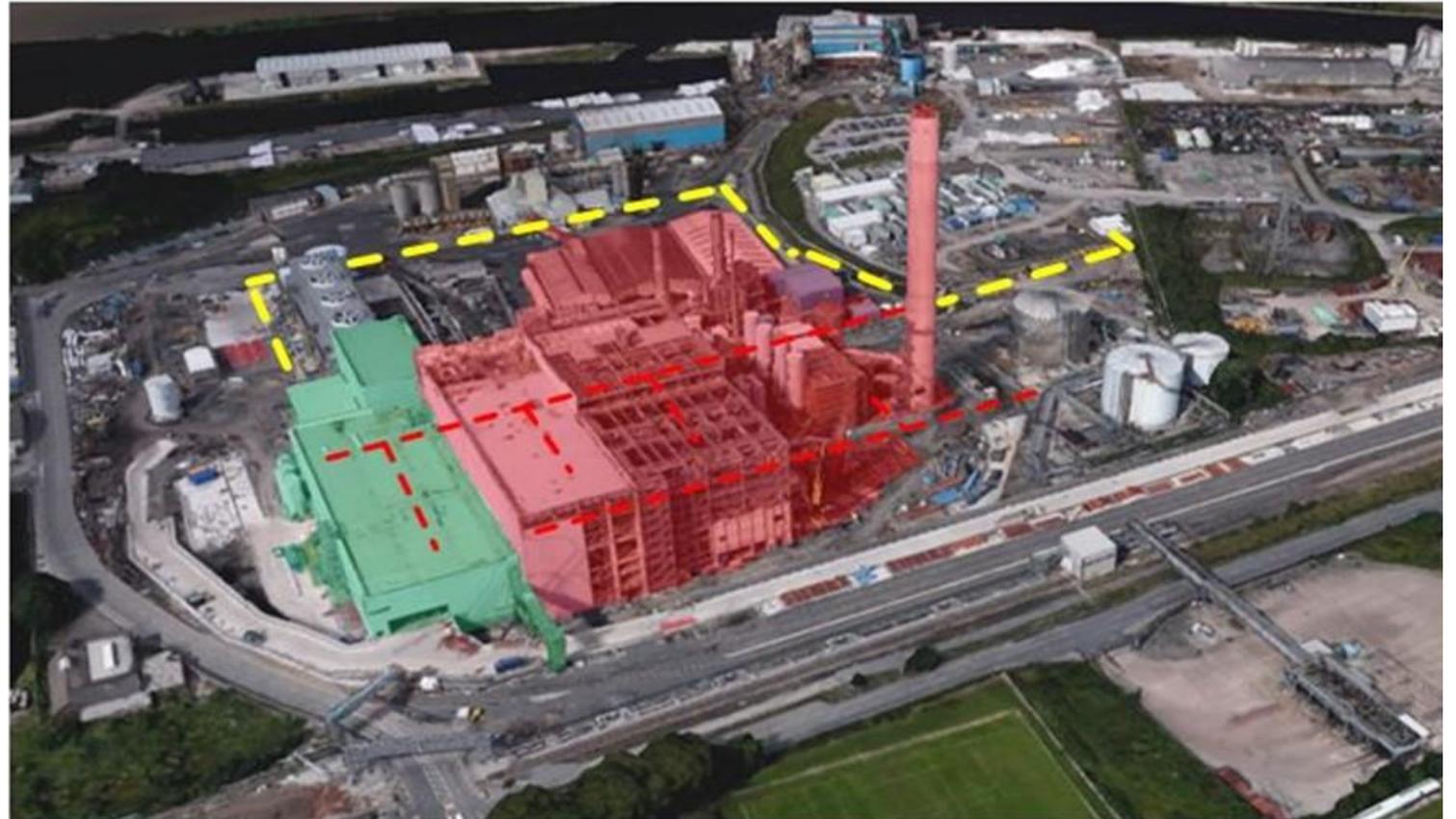
Reroute live equipment away from demolition area

Benefits:

- Building inherent Safety into process
- More remote methodology - machine v man
- Less interface and risk of business interruption
- Significantly reduced ongoing maintenance costs

Cost neutral!

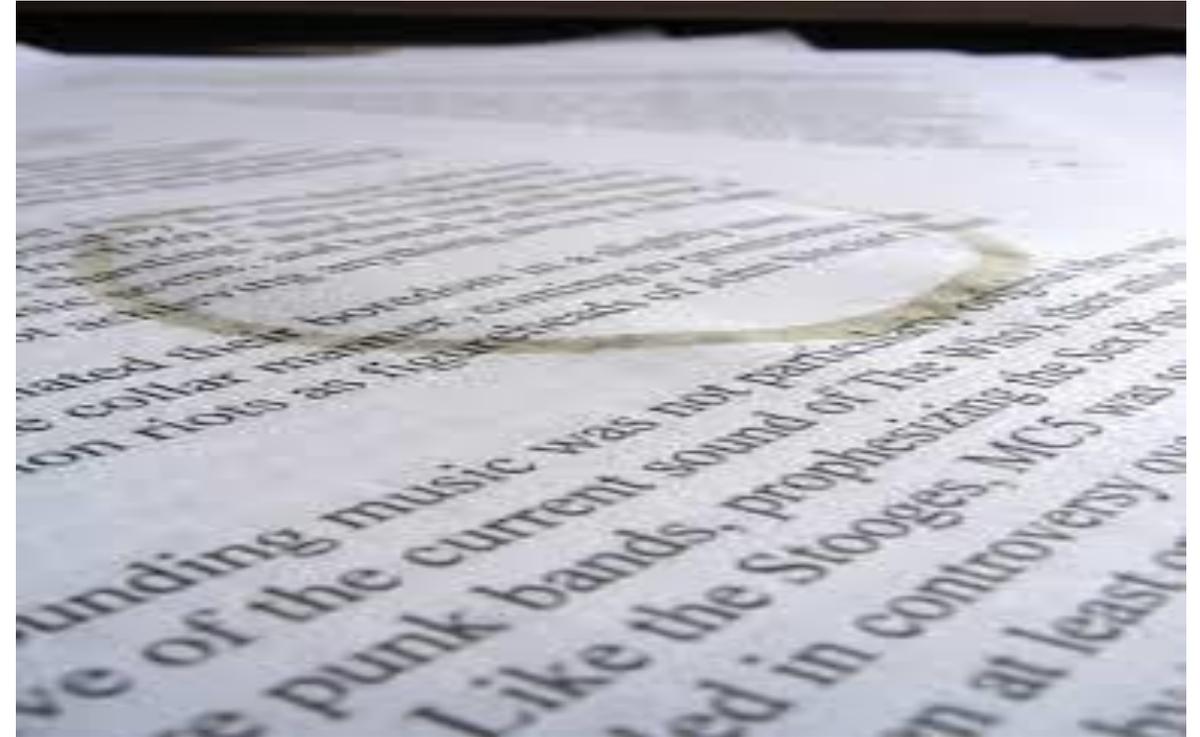
- Live areas
- Redundant plant and equipment areas
- Live Services



The ten things I wish I had known!

Four – Design for decommissioning/derisking

- The Client had already tendered the project
- ABB to re-scope the project and re-tender
- Reviewed the information provided to the prospective Contractors
- All the risks on the project had been passed on to the Contractor and there were a number of information gaps
- Further studies were carried out and the project re-tendered – HIM's, PCB's, Underground services
- After a bid review and clarifications
- The credit increased by over 1,000% paid to the client
 - Contractor awarded additional phases of work
 - More importantly no accidents or incidents



Do stuff!
And can we have it back next week?

The ten things I wish I had known!

Five – Records / Information

– Keep all information:

- As built, Inspection records, P&IDs etc.
- Construction (Design and Management) Regs – provide information
- Traceability
- “We believe everything you tell us, yet we believe absolutely nothing.”

– In the event of delayed decommissioning capture the knowledge before it gets lost

– Three types of information on projects of this type:

- Know – information you can trust
- Unknowns – information where you know you have gaps
- Unknown unknowns – stuff you don’t know about yet = SHE / Commercial risk

The ten things I wish I had known!

Six – things always take longer than you expect

- Everything takes considerably longer than you would expect. Planning requirements / legal compliance
- Internal processes - approvals
- Management of Change - not normal operation - effect of doing things differently
- The sooner you remove the redundant assets after the closure the better,
 - It never gets cheaper
 - Becomes unsafe to demolish



Unsafe to demolish?



The ten things I wish I had known!

Seven – things do go wrong

- “Don’t worry, it will be all right we know what we are doing”!
- **“Its ok we have always done it this way”**
- YouTube
- Lessons learned
- Appointing the right suppliers with the required:
 - Skills, Knowledge, Experience
 - Competence
- Question what you don’t believe or understand



Are you sure?

Decontamination

Eight - How clean is clean?

- Different mind set
- Most cases not trying to protect asset value
- What is “clean”?
- Capture knowledge of key people before you lose them

Unknown plant status to known status

= Reducing the RISK



The ten things I wish I had known!

Nine – building the right team

- Identify key people early - incentives to stay
 - Losing corporate knowledge
- Peoples behavior changes
- Loss of key resource can prevent you from following existing processes
- Regulator interest

“You will knock a nail into wood with a hammer but you probably would not use the same hammer to take it out again”

source unknown

The right people, with the right knowledge, at the right time

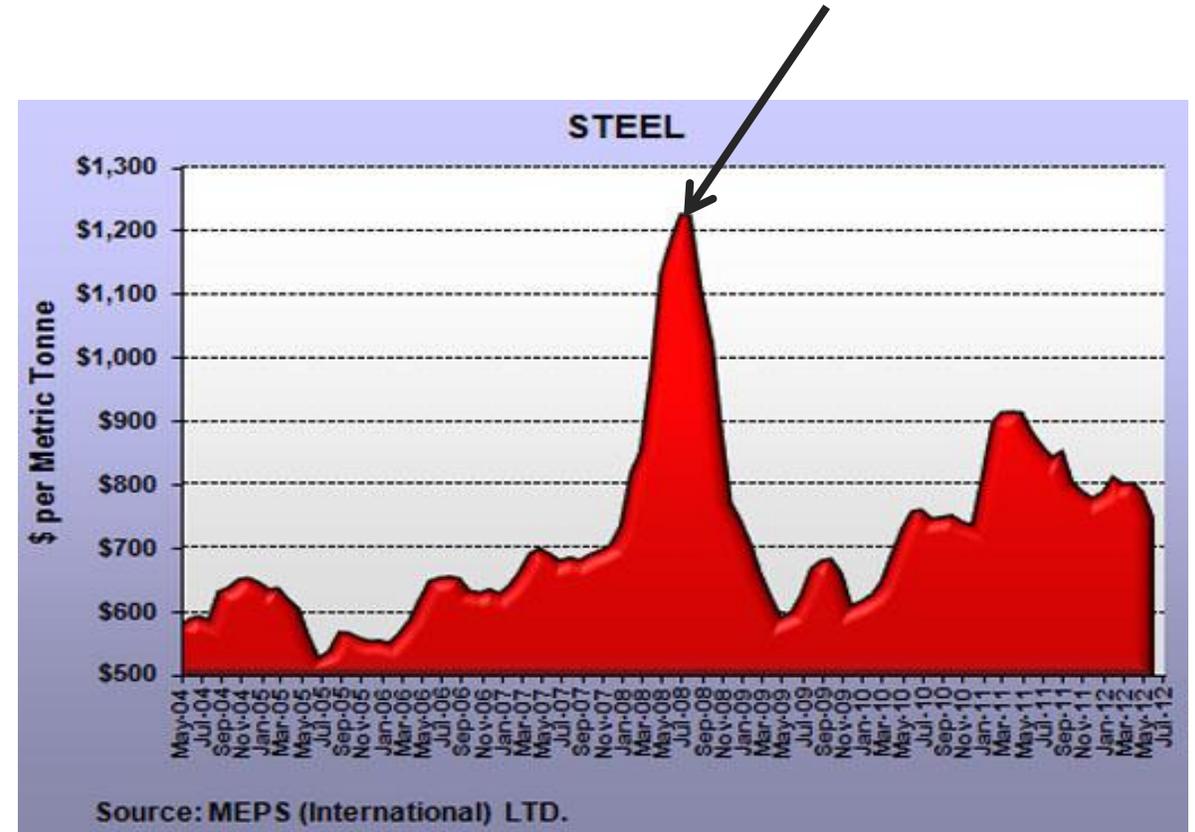
The ten things I wish I had known!

Ten - Commercial Arrangements

- Gain Share v Fixed Price v Time & Materials
- When was the Chinese Olympics
- The price can go down as well as up
- Who takes the risk – derisk = better benefit to everyone
- Short term gain long term pain

Tender periods

- Short timescales, can drive bad projects and not get best value
- Expectations on tender documentation



The ten things I wish I had known!

Ten – Commercial Arrangements



Summary

- The process is not new, but all projects are different and will have their own specific issues!
- You would not employ a pipe fitter to install your control system!
 - Right people,
 - at the right time,
 - with the right information.
- In decommissioning delay only increases the hazards, risk and cost
- By engaging early and designing for decommissioning it will result in the costs coming down, reduced risk and improved SHE performance.

Summary

- "Those who don't know history are destined to repeat it." Edmund Burke (1729-1797)
- “We are born with a bag of luck and no experience, the trick is to get the experience before you run out of luck” – Unknown
- “Learn from the mistakes of others because you will not live long enough to make them all your self” - Unknown

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