QUALITY MANAGEMENT OF THE TRAINING SYSTEM
(LOTUS NOTES GROUPWARE VERSUS THE PAPER RAT RACE)

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Introduction:

The purpose of this paper is to overview the development process for a Competency Based Training system focussed on training skilled operators in a heavy, engineering production environment. The process utilised and outcomes achieved are, however, applicable to any work context reliant on standard operating procedures. The product was a training program and an overarching management system capable of maintaining the training program efficiently. At the same time, training evaluation can provide a systematic mechanism for feedback to the operating procedures.

The Requirement:

The requirement was expressed in very simple terms. The requirement was for:
• A Competency Based Training system (in this case for ironworkers in the Galvanised Products Department of BHP's Western Port Works)
• The CBT system is to achieve maximum effectiveness and SAFETY, at
• Minimum cost.

Of course issues of definition arise, including, measurement tools for effectiveness and terms such as productivity, safety, on job training, workplace training and assessment, and the cost.

What Existed:

There was a training program in place based on a multitude of paper based "knowledge" booklets, which essentially described the equipment. Operators did operate the production lines so there must have been some form of skills training occurring. However, the training "system" was less than well defined and documented, and progress through it was determined by "passing" written tests which merely checked on a trainee's knowledge at a given time. Assessment did not measure a trainees ability to perform the job.

At the same time, the Steel Industry Competency Standards for Ironworkers were complete (draft) and with the National Training Board awaiting approval. There was a training process, established and progressing well, to train personnel as workplace trainers and assessors, but there was no systematic approach to what the appropriate training task was in the workplace.
The end product of training is the performance of a job which was well defined by Standard Operating Procedures, Process Specifications and operator position. That is, the production lines existed, the raw product existed and it was known what the operators had to do to get the raw product from one end of the line to the other and value add to the raw product.

Observation of what was in place already led our team to a very straightforward conclusion. The essence of a Competency Based Training system existed. The missing ingredients were;
- a systematic approach to on job training processes and documentation,
- supporting CBT documentation, and
- linking operating documentation with CBT documentation.

**Objective:**

Therefore, the teams objective became:
To design a systematic competency based training process and associated documentation within the following constraints;
- minimum disruption or interference to the operation of the line both during the research for the design and during the actual training and assessment,
- documentation to be such that the maintenance (of the documentation) is minimal,
- maintain currency of information,
- in built validation and feedback,
- adherence to national documentation formats,
- adherence to the National Framework for the Recognition of training, and
- most importantly - satisfy the training needs of the organisation, and have the project completed in twenty four weeks.

The project involved three production lines, twenty operator positions, and over 700 operating procedures of varying format and style as tends to happen as documentation amasses over a period of time and different authors.

**Training Packages:**

The team developed training packages which, interestingly, mirror the Training Package requirements which are described in the draft Australian Recognition Framework (version 5.4 15 August 1996). The four components are:
- competency standards - these state the workplace outcomes required by industry if people are to be competent in employment, and act as the benchmarks for the development and delivery of training;
- assessment guidelines - these set out an industry framework and mechanisms for ensuring valid and reliable assessment of achievement against the industry competency standards, and may include model assessment instruments;
- learning strategy - this provides suggested means for achieving the outcomes, including a possible modular structure, a range of pathways for delivery, guidance on implementation requirements, and learning resources to underpin delivery where requested and appropriate;
• professional development - this provides strategies and resources for developing, where required, staff to deliver or assess using the package.

**Solution:**

Lotus 'Notes' (registered trademark of Lotus Development Corporation) was chosen as the software platform used to develop the training package. 'Notes' was used essentially as a document management tool, utilising its database and form generation capabilities to minimise the effort in producing and maintaining documents. My colleague Keith Linard will describe and demonstrate the package soon. A significant asset of this package is the ability to generate documents from data in other documents already in the database.

The design and development process for the training package followed a very straightforward approach.

**First**, a DUTY - TASK - SUB TASK listing was produced for every operator position on the line or for whom a training package was required. A D/T/ST listing or Duty Task Inventory (DTI) is a hierarchal listing that describes the performance of the work of the position it relates to. The DTI was an analytical exercise, derived from approved documentation, rather than an observation, interview, Dacum, CODAP or some other method of job analysis.

The following relationships were used to generate the DTI:

- **Duties**  
  Steel Industry Competency Standards - Competency elements.
- **Tasks**  
  Competency element performance criteria.
- **Sub-tasks**  
  Standard Operating Procedures.

The reasoning behind this choice was that the Standard Operating Procedures (SOPs) should fully describe the work of operators. If they don't then a SOP should be written to cover a shortfall. This exercise can be undertaken with minimum disruption to the operators thereby minimising cost. Perhaps the most important factor here is determining a relationship between competency standards, operating procedures and operator positions.

The **second** step was to validate the DTI. This was achieved using an expert panel of experienced operators. This step identified both redundant and missing operating procedures. Thus not only was the DTI validated but attention was focussed on any deficiencies in the SOPs. The expert panel personnel were also familiarised with the philosophy of the training package. Their expectations of the training outcomes were sought. This group was seen as essential and primary to the acceptance of the training package in the workplace. The resultant validated DTI formed the framework for the training documentation because it structured the linkages between operator position and operating procedure.

The **third** step was again a consultation process with stakeholders to determine the forms, views and documents to be available in the 'Notes' database. Considerations such as national format, client needs, pedagogical merit, look and feel, and technical
factors were negotiated (or imposed as the case may be) before deciding on a specification for the 'Notes' database.

Resulting from the consultation and development activity was a database which included:

- (Steel Industry) Competency Standards source document
- Standard Operating Procedures source document / form
- Duty Task Inventory source document / form
- Curriculum Documents A, B, and C auto composed
- Coaching Plan/Specification auto composed
- Assessment Plan/Specification auto composed.

Also preliminary design work would be done on further documentation namely:

- Work Permit form
- Trainee records form
- Trainee log book auto composed

The terms used above are defined as;

Source document - is a document or data which is imported from another source eg. a word processing document.

Form - variable data can be entered into fields which are part of a document containing fixed headings and fixed data.

Auto composed - the document is generated from data contained in the database. Fields within forms are automatically filled in or updated from data already in the database.

The final steps are the design, enter data, implement, test, de-bug and improve stage.

The end product is not static. It is a dynamic system that can be readily modified and adapted as the structure evolves, whilst at the same time maintaining the integrity of the data that has been input to the system. The process, however, is simply a documentation generation and management system. It does not of itself deliver training. It is a tool that can support the work of trained workplace trainers / coaches and assessors.

Conclusion:

The objective was to design a training package for production workers based on the standard operating procedures used in the production process. This involved producing a training structure and documentation. Lotus 'Notes' software has been used as a platform to design and implement the Competency Based Training training package and management system. 'Notes' is a useful tool which may be used by training managers, trainers / coaches and assessors. As well as a training management tool the system can be used to have trainers provide feedback through the training process as to the validity of standard operating procedures.

The training system structure is illustrated on the following pages.
TRAINING DOCUMENTATION HIERARCHY PER POSITION

DUTY
TASK
SUB TASK

CURRICULUM (=DUTY)
C
1

CURRICULUM
C
2

LO1 (=TASK)
LO2
LO3
LOX

ASSESSMENT PLAN (= SUB TASK)

COACHING PLAN (= SUB TASK)
The Technical Dimension of the Training Management Solution

The first section of this paper has described the task and solution from the perspective of achieving relevant industry training standards for CBT at BHP Western Port. This section focuses on the technical solution to the management of the documentation and workflow.

Overview of Lotus Notes

As noted, the authors considered that the Lotus Notes groupware paradigm [i] provides a framework which permits implementation of a training quality management system which lessens administrative demands on training staff whilst enhancing the quality and effectiveness of the training process. It also provides a sound basis future integration into an ISO9000+ system should this be required.

Lotus Notes is a sophisticated management systems development platform that allows individuals or collaborative groups, using standalone computers or networks to:

- access and collate information for direct use, adding value or collaborating;
- organise information into hierarchically integrated documents;
- automate the routing of documents for sequential use / action.

(Documents, in this context, include text, graphics, mail, digitised voice and video etc.)

Lotus Notes differs significantly from Email systems in that it permits seamless automated workflow and automated hierarchical linking of information. In essence it is a "smart" document database. It operates seamlessly across MACINTOSH, WINDOWS, OS/2, NLM and diverse UNIX environments.

What is Groupware? What is an Intranet? & Where does NOTES fit?¹

Groupware is one of those nebulous buzz words in the software world whose definition seems to vary from person to person. The most common appreciation is that of 'mail enabled software', software which has the capability of supporting a team approach to concept development (eg through adding comments or amendments.

Users of bulletin boards, electronic conferencing systems or the World Wide Web also may consider shared access to information the basis of groupware.

¹ This and the subsequent section draw extensively on two papers: Linard, K and B Brimo, Practising what we preach: TQM in higher education, Proc 1994 International Conference of Engineering deans and Industry leaders, Monash University, and Groupware., n anonymous (but probably written by or in collaboration with Lotus staff) WWW document, 25/11/95.
The shared access to hypertext-linked corporate information, in a manner reminiscent of the World Wide Web, has given rise to the term Intranet, an equally nebulous term.

In fact what we are seeing is the merging of three distinct, but increasingly overlapping, application areas: electronic messaging, information management, and workflow/process automation. Form these have arise a variety of complementary software technologies: e-mail, electronic conferencing and bulletin boards, forms routing and tracking and most recently the Web.

However, to define group work activities in terms of the technologies they use is trivialising the situation. People interact in a multiplicity of ways as the individual, the group and the task needs vary. Taking a more holistic perspective, information and knowledge are shared in support of three primary organisation functions: communication, collaboration, and coordination.

![Dimensions of Group Interaction](image)

We can extend this model by recognising that the communications - collaboration - coordination elements may facilitate group work in two broad dimensions: through the degree of structure imposed by technology, and in the balance between passive (self initiated) and active (push-pull) role that the technology plays in guiding the group work.

- The first dimension deals with the degree of structure required in group work. This may range from ad hoc distribution of information (i.e., sending an e-mail message to a group) to more highly structured processes where the steps are pre-defined in standard operating procedures, such as routing a purchase order.
- The second dimension addresses the push-pull relationship between the technology and the individual or workgroup. That is, passive applications leave control in the hands of
the user or the workgroup, while active applications play a more proactive or directive role by controlling the flow of group work. For example, a World Wide Web database that allows users to navigate a discussion thread is passive (pull), whereas a system that actively monitors a process and notifies the user of an event is active.

The diagram below is useful in understanding how various groupware applications correlate to these dimensions, as well as their relationship to each other. Communication, collaboration and coordination systems each have their own unique characteristics. Understanding the design point of each area is important in identifying the criteria for technologies and applications in each space. *Taken together, these criteria form the basis for evaluating a comprehensive groupware architecture -- seamless support for communication, collaboration and coordination at any time, in any place.*

![Diagram of Groupware](image)

**Categories of Groupware**

**Groupware and the Training System**

The training system in any large organisation shares the above groupware facets.

1) **Communication**
   - From line to line management: suggestions for improvements to standard operating procedure (Passive)
   - From line management to training management: standard operating procedure revised (Passive))
   - From training management to trainers: modified training document (Passive)
   - From trainers to trainees: modified training documents (Passive)
2) **Collaboration**
- Development of revisions to standard operating procedures (Active)
- Development of revisions to training documents (Active)
- Interaction between trainers and trainees via courseware and student responses (Active / Passive)

3) **Coordination**
- Audit control and version control of documents (Active)
- Audit control of actions against requirements (Active)

*The Technical Nature of BHP’s Training Document Management Problem*

The nature of the documentation and their interactions is illustrated in Figure 1. What this figure does not bring out is the sheer volume of documentation that must be managed, and the complexity of ensuring version control and synchronisation between documents. Noting that failure to maintain currency of the standard operating procedure and related training documents can, in a manufacturing environment such as BHP Western Port, lead to life threatening incidents, the criticality of version control and access to the most up-to-date documents is obvious.

The Galvanised Products Division of BHP Western Port has some 800 standard operating procedures (SOPs). As many as 20 SOPs might be modified (even if only marginally) in any week.

Every SOP gives rise to an Assessment Specification and each of these gives rise to an associated Coaching Plan.

Each SOP is also related to specific Duties, Tasks and Sub-Tasks.

Each of these documents were previously managed as individual Microsoft Word documents . . . when fully developed this would amount to some 3,000 files, catalogued within the limit of the DOS 8 digit nomenclature!

In practice, the system was operated as a paper based system. Also, the complexity inhibited integration with the Steel Industry Competency Standards (several hundred documents), with standard operating procedures, task descriptions, position descriptions and with trainee records.

Noting that the formal responsibility for SOP management and training management are separated, there were obvious problems with version control and synchronisation of the different elements of the system.
The Groupware Integrated Training Management Solution

In reality, because of the sheer complexity in managing the volume of documents and the criticality of synchronising the SOP and training documentation, a very tight control was exercised over access to the document database. Problems with or suggestions for improvement of SOPs and discussion of the appropriate amendments to SOPs existed as a separate ad hoc process.

The groupware solution proposed was in three parts:

- develop a totally integrated documentation system, as shown on the left hand side of Figure 1, encompassing
  - steel industry competency standards
  - standard operating procedures
  - duty-task inventory
  - curriculum documentation (including training module descriptions and learning outcomes)
  - assessment specifications
  - coaching plans
  - trainee records

- (for the future) provide the basis for a fully collaborative information and communication system so that all line managers and line operators can have direct access to the authoritative documents, and trainees can have direct access to the most current training materials.

- (for the future) provide the basis for simple integration into the ISO9000+ system.

The Lotus Notes Platform

The first of these stages was completed with approximately 45 days NOTES application development work. Future training management system applications will, of course, build on this base and hence require considerably less input.

Within 3 weeks a working prototype was developed and demonstrated to the client. This provided functionality beyond that conceived of by the relevant BHP staff (although one item in their functional brief remained difficult to address with complete satisfaction in Version 3 of NOTES). This meant that the client could then interact with the development team to fine tune the product.

The reality, at this stage, is that perhaps 10% percent of the NOTES functionality is being used. At present it is a highly effective document management system, with only limited used being made of the collaboration and coordination capabilities.
The Training Management System Structure

The user is initially confronted with the NOTES Desktop, where the document database is represented as a folder. In this instance, one representing the document repository and the other the name and address book for all staff.

One can consider this as analogous to a filing cabinet with 5000 plus documents filed into appropriate categories.

The most recent release of NOTES permits the development of graphically oriented menu system. The present Training Management System at BHP Westernport has a traditional text based menu system as depicted below.
The NOTES directory (Views) provide the entry point to the stored data. Information can be presented in a multiplicity of dissections. The following diagram shows an hierarchical presentation of Duty-Task-SubTask information by Work Area. The software readily enables the user to develop customised views in addition to those designed into the application.

The format of document printout clearly depends on client requirements. Attached to the end of this paper are selected examples of the end product.

The current system is designed to provide the full documentation for eventual submission to the Steel Industry Council for subject accreditation. It is estimated that the full paper documentation would be almost 1 metre in height. Assuming the Council has no objections, the intention would be to provide sample documentation, together with the full curriculum materials in electronic format.

Current Applications of Lotus Notes in Industry Training and Post Secondary Education

Whilst the corporate installed base is now over 5 million, Lotus Notes has been in a robust form for large corporate environments for only a little over 4 years. It is not surprising that there has been only minor penetration into the industry training and post secondary
education area. Nonetheless there are some dramatic success stories, mainly in the university field. Few examples have been identified in the TAFE area.

Perhaps the most extensive application is at the Business Computing faculty at the University of Paderborn in Germany, where all faculty administration, all curriculum documentation and liaison with students is via integrated Lotus Notes applications.ii

The University of St Gallen, Switzerland, brought some 2000 students on-line with Lotus Notes in little over 1 year. There are over 50 campus-wide Lotus Notes applications, ranging from curriculum management, course presentations and course evaluation to student administration. [iii]

Henley Management College in the UK is moving to support its 6000 plus world-wide distance learning students.

New York University has established an experimental Virtual College, built around Lotus Notes. The Notes based virtual campus serves the faculty (curriculum management, grade reporting, course production, Email, research support and committee support), the student (course discussion, project development, Email, course evaluations), administration (student enquiries, student admissions, student registration, student transcripts, faculty records) and library (course hypertexts, case study materials, reference books, journal articles audio/video materials).

The Australian Defence Force Academy has just procured some 2000 licences in order fully to implement NOTES in the administrative and teaching areas of the institution.

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i At the present moment Lotus Notes is both a product and a unique management computing platform. When promised competing products eventually arrive in the market place we will need to devise a common name for this paradigm. In this paper we use the program name, Lotus Notes, as synonymous with the paradigm.


### CURRICULUM DOCUMENT

#### Part A - General Information

1. **Proponent**

2. **Address**

   BHP Steel  
   Western Port Works  
   Private Bag No.1  
   HASTINGS  
   Vic 3915

3. **Contact details for proponent**

   Mr Ron Wilson  
   Training Supervisor  
   Galvanised Products Department  
   Ph 059-79-6351  
   Fax 059-79-6779

   Other Contacts:  
   Mr Dave Minto  
   Senior Organisation, Development and Planning Officer  
   Ph 059-79-6284  
   Fax 059-79-6127

4. **Type of submission**

   Initial accreditation

5. **Copyright information**

   Copyright 1996 by BHP Steel.  
   All rights reserved. No part of this Training Management System may be reproduced or utilised in any form or by any means without permission from BHP Steel.

6. **Licensing and franchise arrangements**

   All materials are freely available for use within BHP Steel.

7. **Accreditation authority**

   Steel Group Accreditation Council.

8. **AVETMISS information**

   **ASCO (OCCUPATIONAL TYPE) CODES**  
   7399-13

   **ANZSIC (INDUSTRY TYPE) CODES**  
   2711

   **FIELD OF STUDY**  
   060210

   **STREAM OF STUDY**  
   3222

   **NATIONAL COURSE CODE**  
   **PROVIDER COURSE CODE**

   **DISCIPLINE CODE**  
   0706110

28-10-96
1. Course name, qualification and ASF level

<table>
<thead>
<tr>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate II in Ironworking - Galvanised Products</td>
</tr>
<tr>
<td>Certificate III in Ironworking - Galvanised Products</td>
</tr>
<tr>
<td>Certificate IV in Ironworking - Galvanised Products</td>
</tr>
</tbody>
</table>

Completion of training for any Operator Position classified as ASF 2 would merit a Certificate II, for Operator Positions classified as ASF 3 a Certificate III and so on. Certificates awarded should be endorsed with details of the specific line and position for which training was received. Ironworkers who complete training for more than one Operator Position at a particular ASF level would receive further endorsement to their already awarded Certificate.

**ASF Level**
- Tester, Process Assistant, Entry B and Exit B ASF 2,
- Entry A and Exit A ASF 3,

**Nominal Duration**
- Tester 200 hours
- Process Assistant 100 hours
- Entry B 200 hours
- Exit B 500 hours
- Entry A 400 hours
- Entry MCL6 700 hours
- Exit A 800 hours
- Process Operator 1000 hours

2. Course development

**Industry and market needs**

These courses are designed for ironworkers employed in the Galvanised Products Department at the BHP Flat Products Division, Western Port Works. The Galvanised Products Department (GPD) is one of five key production units at the BHP Western Port Works. The GPD is comprised of three production lines namely:

- No. 4 Zincalume Line MCL4,
- No. 5 Zincalume Line MCL5, and
- No. 6 Metallic Coating Line MCL6.

Each line is operated by ironworkers assigned to Entry, Process, Exit, or Test sections of the line.

The operators are responsible for the efficient and safe operation of the line and the production of a quality product. This cannot be achieved unless all operators are trained in a consistent and systematic manner. BHP has a stated goal in its Business Policy Plan of introducing Competency Based Training to all operation units. This goal is predicated by the National Training Reform Agenda including BHP Steel's move to Competency Standards for the Steel Industry. Thus, there is a commitment from BHP management to implementing a competency based training program for the GPD operations area. Such a program is to be built on the foundations of Competency Standards developed by the Steel Industry Competency Standards Board.

These courses are designed in accordance with Competency Based Training principles and format, and all documentation complies with National (ACTRAC) requirements. Previous Employee Development Programs were not Competency Based nor supported by suitable curriculum documentation.

**Review for re-accreditation**
Not Applicable

3. Course outcomes

**Course outcomes**
The courses provide:
* accredited competency based training for ironworkers in the Galvanised Products Department at BHP Western Port Works,
* training and skills development such that course participants can be employed in designated operator positions in the Galvanised Products Department at BHP Western Port.
Competency standards
These courses are based on the Steel Industry Competency Standards (Draft - June 1995).

The course is designed to achieve:
* Core Competencies Levels 1 and 2
* Product Coating Competencies Level 2
applicable to the operations (hot dip materials) at the Western Port Works.

The core competencies achieved are:
Level 1.
Follow safety procedures in the workplace
Clean worksite
Communicate in the workplace
Work as part of a team
Apply basic quality assurance practices
Level 2.
Maintain the safety of the work environment
Maintain cleanliness of the plant and equipment
Carry out routine production maintenance
Contribute to production control tasks
Communicate information
Use computer technology to monitor production processes
Promote teamwork
Maintain quality in work area

The product coating competencies achieved are:
Level 2.
Prepare coating equipment
Prepare materials for coating
Hot dip materials
Operate entry section
Operate exit section
(PC level 2 competencies not included relate to coating processes not undertaken in the Galvanised Products Department)

All the competencies listed above are fully integrated into the training documentation for all operator positions. Training is based on performance of operator tasks in the workplace, hence achievement of competency is totally dependent on the trainee’s ability to perform the job under normal operating conditions.

Furthermore, throughout an employee’s time at BHP employee development courses are available. These are undertaken on a needs and availability basis and so are not included as part of the curriculum for operators, however, as a general rule all employees will complete these courses as part of their employee development. The courses are listed in an appropriate (approximate) order of being done:

Plant Induction (IC 1105)  1 day
Area Induction  1/2 day
Coating Lines (self paced printed material IC 1104)
Environment (self paced printed material IC 1202)
Administration (self paced printed material IC 1301)
Plant safety (self paced printed material IC 1302)
Safety awareness  1 day
OSH (IC 2304)  1/2 day
Stores procedures (self paced printed material IC 1501)
Process improvement (self paced printed material IC 1304)
TQC concepts (self paced printed material IC 1305)
Quality systems  1/2 day
Forklift driver  1 day

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4. Course structure

<table>
<thead>
<tr>
<th>Welding safety</th>
<th>3 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane chaser / dogging</td>
<td>5 days</td>
</tr>
<tr>
<td>Communications</td>
<td>1 day</td>
</tr>
<tr>
<td>Team building</td>
<td>1 day</td>
</tr>
<tr>
<td>Report writing (IC 3302)</td>
<td>1 day</td>
</tr>
<tr>
<td>Effective questioning</td>
<td>1 day</td>
</tr>
<tr>
<td>Leadership</td>
<td>1 day</td>
</tr>
<tr>
<td>Interaction (IC 3304)</td>
<td>3 days</td>
</tr>
<tr>
<td>Analytical trouble shooting (self paced printed material IC 1303)</td>
<td></td>
</tr>
<tr>
<td>Analytical trouble shooting (IC 3305)</td>
<td>5 days</td>
</tr>
<tr>
<td>Workplace coach</td>
<td>4 days</td>
</tr>
<tr>
<td>Workplace assessor</td>
<td>4 days</td>
</tr>
</tbody>
</table>

**General competencies**

The eight Mayer competencies underpin effective workplace performance. The training of operators aims to achieve:
- performance at an acceptable level of skills
- organising work tasks
- responding and reacting to non standard situations
- interacting in the workplace and team work
- transfer of skills and knowledge to new situations,
and as such directly contribute to achievement of Mayer competencies. Literacy and numeracy testing, for initial employment purposes, further addresses development of key competencies in so far as trainees are assessed for these aspects of key competency.

**Recognition given to the course**

Not applicable.

**Licensing and regulatory requirements**

Not applicable.

**Outline of course structure**

Each course is designed around the competency elements and performance criteria from the 'Product Coating' competency unit of the Steel Industry Competency Standards, and to be in accordance with the employment structure within the Galvanised Products Department.

This is achieved by having all modules relate to a specific operator position for each line. Duty Task Sub-task listings were developed for each position and then modules developed from the listing. There are two modules per operator position. In all cases the modules match the competency elements namely, Operate (position), and Perform routine production functions for (position). The learning outcomes for each module directly relate to performance criteria from the Competency Standards. The learning outcomes are further sub-divided to standard operating procedure level with an assessment plan and a coaching plan for each standard operating procedure.

**Requirements to receive the qualification**

Successful completion of a course involves achieving competency to perform in the designated operator position under normal workplace conditions including supervision for the designated position.

There is no specified pattern for ironworkers to complete training for individual operator positions nor is it mandatory that an operator be trained in each and every position for a line. The operator positions are classified into start, middle and senior positions as follows.

<table>
<thead>
<tr>
<th>Start</th>
<th>Middle</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry B</td>
<td>Entry A</td>
<td>Process operator</td>
</tr>
<tr>
<td>Exit B</td>
<td>Exit A</td>
<td></td>
</tr>
</tbody>
</table>

**Tester**

Typical career progression would normally involve completion of at least two start positions, one middle position and the senior position, not necessarily all from the same line. This is further illustrated by the pre-requisite position listing.

<table>
<thead>
<tr>
<th>Position</th>
<th>Pre-requisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process operator</td>
<td>Process assistant and Entry A or Exit A</td>
</tr>
<tr>
<td>Entry A</td>
<td>Entry B</td>
</tr>
<tr>
<td>Exit A</td>
<td>Exit B</td>
</tr>
</tbody>
</table>

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Exit points

This training program is structured to achieve training of Ironworkers for specified positions within the GPD. As such, exit points would logically exist at completion of training for each position. This is the reasoning behind proposing multiple courses with each course relating to a specific ASF level for operator position. Thus there are no exit points within a course where an award can be achieved.

On-job training

All training is undertaken on the job and delivered by appropriately trained and qualified Workplace Coaches i.e. personnel who have completed an accredited course satisfying Workplace Trainer competency standards.

Customisation

The courses can be customised to suit operator positions in any product coating production area. The modules within each course are defined by the elements of the competency standards, that is they are determined by what an operator must do to perform the job of a particular operator position as defined by the competency standards and standard operating procedures relating to that position, hence they are fully customised.

The courses are further structured to allow for changes to operating procedures and line configuration without affecting course outcomes. Changes to work structure which may lead to changes to operator positions can also be customised.

Entry requirements

This training program is available to Ironworker employees employed in the GPD. Entry requirements are employment related. These involve numeracy and literacy testing, aptitude assessment and an interview process. There are no entry requirements related to previous study although current employment requirements include completion of year 12 studies.

Recognition of prior learning

Recognition of current competency (RCC) arrangements will be implemented for all Ironworkers currently employed in the GPD. Future Ironworkers will have RPL options available to them, however, because of the unique nature of the training this would appear to be a little utilised option. Ironworkers with previous experience elsewhere in the industry can anticipate more rapid progress through their training.

Assessment approach

Assessment will be undertaken in the workplace by qualified Workplace Assessors. Assessment is to be in accordance with the Assessment Specification which forms part of the overall curriculum documentation. Assessment Plans based on each Standard Operating Procedure exist. The sum of the Assessment Plans for an operator position constitutes the Assessment Specification for that position.

Delivery modes

All training will be delivered on the job by qualified Workplace Coaches. The training is to be delivered in accordance with the Coaching Specification which forms part of the overall curriculum documentation.

Resources

This training program is an on the job program undertaken under normal operating conditions for the Galvanised Products Department. The resources required are the same as for normal operation of the department. Additional resources involve Workplace Coach and Workplace Assessor personnel.

Articulation and credit transfer details

The courses described form an articulated pathway of training and career progression for Ironworkers within the GPD. The Certificate IV course will provide credit transfer towards studies undertaken by selected Ironworkers to progress to Ironworker level 5 status.

Training, education and career pathways

Ironworkers at BHP Western Port have a six tier employment structure. On initial employment Ironworkers are graded as level 0. Level 1 is achieved after the first year with further progression to level 4 being defined by the quantum of training successfully completed, which under a competency based training system is analogous to competency. Level 5 training is available for selected Ironworkers. The courses described by this documentation encompass levels 0 to 4 inclusive.

The courses described form an articulated pathway of training and career progression for Ironworkers within the GPD. Further courses, as previously described, are also available to Ironworkers within the Employee Development Program at BHP Western Port. Training outcomes (achievement of defined competency) directly contribute to progression between Ironworker levels.

28-10-96
# MCL4 - Entry Operator B

1. **Module details**
   - **Module name**: Operate entry section (MCL4)
   - **Nominal duration**: 100 hours
   - **Module codes**: MCL4 - ENB - 1
   - **Discipline code**: 0706110

2. **Module Purpose**
   - This module is one of two, undertaken together, designed to impart the skills and knowledge such that the trainee can display competency in the operation of MCL4 ENTRY OPERATOR B.

3. **Prerequisites**
   - Nil

4. **Relationship to competency standards**
   - Steel Industry Competency Standards (Draft June 1995)
   - PC7.1

5. **Content**
   - All Standard Operating Procedures as listed in MCL4 Standard Job Procedures Index

6. **Assessment strategy**
   - **Assessment method**: All learning outcomes will be assessed by qualified workplace assessors in the on-job environment. Assessment is to be in accordance with the Assessment Specifications which form part of the overall curriculum documentation.
   - **Conditions of assessment**: The conditions of assessment are as detailed in the Assessment Specifications which form part of the overall curriculum documentation.

7. **Learning outcomes details**
   - **Learning outcome**:
     - 1.1 Observe entry section safety procedures
     - 1.2 Check materials for consistency with schedule
     - 1.3 Locate material in entry section without damage
     - 1.4 Attach material to line to ensure continuity of process
   - **Assessment criteria**: Each learning outcome is achieved when the trainee displays competence in performing the Standard Operating Procedures (SOPs) which comprise the learning outcome. A separate Assessment Plan exists for each SOP. The sum of the Assessment Plans forms the Assessment Specification for this module.
   - **Conditions and method of assessment**: As detailed in the Assessment Plans.

8. **Delivery of the module**
   - **Delivery strategy**: All training will be delivered on-job by qualified workplace coaches. The training is to be delivered in accordance with the Coaching Specifications which form part of the overall curriculum documentation. A Coaching Plan for each component (Standard Operating Procedure) of this module exists. The sum of the Coaching Plans forms the Coaching Specification.
   - **Resource requirements**: As detailed in the Coaching Plans.
   - **Occupational health and safety requirements**: As detailed in the Coaching Plans.
MCL4
PC4 Hot dip materials

This unit involves: coating product using the hot dip process.

ELEMENT OF COMPETENCE
PC4.1 Operate hot dip process

Performance Criteria Detail:
- Operating conditions are correctly maintained in accordance with schedule.
- Hot-dip tank linings are maintained to meet standard operating requirements.
- Surface finish is tested to ensure it meets specification.
- Test results checked and logged.
- Material leaving process section is at the specified temperature.
- Appropriate safety clothing and equipment is used as provided.
- Safe working procedures are followed at all times.

RANGE:

Personal protective equipment may include:
- Helmet
- Safety footwear
- Hearing protection
- Gloves
- Eye/face protection
- Respiratory protection
- Heat resistant clothing

Operating conditions may include:
- Atmosphere (Furnace atmosphere)
- Cooling section temperature
- Molten metal
- Liquid additions
- Metal temperature
- Cooling
- Coating weight
- Metal composition

Hazards may include:
- Rail and road movement
- Cranes
- Molten metal
- Hot materials
- Noise
- Air pollution
- Sharp objects
- Heavy objects
- Moving machinery
- Heights
- Falling objects
- Gases

Appropriate authority may include:
- Senior operative
- Team leader
- Technical advice

Fault and variances may occur in:
- Product
- Plant
- Equipment

Team members may include formal and informal teams.