

SUMMER TRAINING REPORT

Submitted by

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Under the guidance of

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Interactive Interpretation Workstation Centre (IIWS),
Western Offshore Basin (WOB)
Oil & Natural Gas Corporation Ltd. (ONGC),
Priyadarshini, Mumbai – 400022

2014-15



Interactive Interpretation Workstation Centre (IIWS),
Western Offshore Basin (WOB),
Oil & Natural Gas Corporation Ltd. (ONGC),
Priyadarshini, Mumbai – 400022

CERTIFICATE

This is to certify that **Ms. Shravani Kulkarni** has undergone SUMMER TRAINING/INTERNSHIP from **08.06.2015** to **07.07.2015** (01 month) at IIWS, **WOB, ONGC – Sion, Mumbai** under the supervision of **Mr. Pradeep K. Kukreja, Chief Manager (Programming)** & mentoring of **Shri Suresh Chand, Chief Manager (Prog).**

Her performance in the training assignment was _____ and her conduct was _____.

**Mr. Pradeep K. Kukreja, Chief
Manager
(Programming)
IIWS, WOB, Mumbai**

Place: Mumbai

Date:

ACKNOWLEDGEMENT

'Written words have an unfortunate tendency to degenerate genuine gratitude to a mere formality'. However, it is the only way to record one's feelings.

I would like to take this opportunity to thank all those who provided their valuable guidance, encouragement and co-operation which made the Summer Training/Internship an enriching experience. It is under the aegis of the useful guidance that I have been able to take one step forward in the completion of Training.

I specially thank my mentor **Mr. Suresh Chand, Chief Manager (Programming)** for their inspiring assistance, due to which my doubts and fallacies shaped into the materialization of this report. I also thank **Mr. P. K. Kukreja, Chief Manager (Programming), Mr. Saju S, Sr. Programming Officer** and **Mr. Sanil Sawant, Prog. Officer** for spending loads of valuable time and exposing me to various System Administration, Programming and Networking issues. I would also like to thank **Mr. Jai Singh, GM(GP)- Head Database, Mr. Shrawan Bajpai, DGM(Geo physics)** for his constant support and help.

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Chapter 1

INTRODUCTION

1.1 IIWS

The Interactive Interpretation Workstation Centre (IIWS) of Western Offshore Basin, commonly called the IIWS, is a major Centre where G&G interpretation of seismic and related exploration data, are carried out for hydrocarbon prospecting. Located on 4th Floor of Priyadarshini Building, the Centre is primarily used for carrying out 2D & 3D Seismic Interpretation with the help of State of the art software and high end graphics Work Stations. Besides these, two Data Viewing Rooms have been setup with workstations installed for carrying out G&G data viewing by outside expert consultants.

The servers, peripheral units and network switches are all housed in a closed room, where the environment factors such as the temperature and humidity are maintained by precision air conditioners. This server room was expanded and all the equipment and ACs have been reoriented. The false floors have been replaced with fire-resistant /fire-proof tiles. The IIWS Centre has been christened a name called ‘MANASKRUTI’. This was inaugurated by Shri Dinesh Kumar Pande, Director (Exploration), on 23rd Feb., 2010.

1.2 Goal and Scope of the project

Today, the paradigm shift in storage architectures from direct-attached storage to storage area network and network-attached storage, has a strong impact on the requirements for storage management software. The managed storage resources could be disks (from a few disks to a large disk subsystem) or tapes (from a single tape drive to large automated tape libraries). A key challenge in this field is the management of removable media such as tape, optical, or others. Besides having to keep track of a potentially enormous number of different volumes and maintaining records of important attributes such as media owner, type, date, I/O errors, contents, and much more, the open storage networking environment raises new questions. Access conflicts must be carefully controlled, mount operations have to run in a robust manner, and it is mandatory to comply with a security concept that protects data as well as privacy and confidentiality. This paper concerns the new requirements for **BACKUP AND TAPE MANAGEMENT SYSTEMS** in storage networking environments. It describes the challenges and relates these requirements to the standards that exist today.

Existing System:

As we know the manual processing is quite tedious, time consuming, less accurate in comparison to computerized processing. Obviously the present system is not exception encountering all the above problems

1. Time consuming.
2. It is very tedious
3. All information is not placed separately
4. Lot of paper work.
5. Slow data processing.
6. Not user-friendly environment
7. It is difficult to found records due file management system.

Proposed System:

In new computerized system I tried to give these facilities.

1. Manually system changes into computerized system.
2. Friendly user interface.
3. Time saving
4. Save paper work
5. Connecting to database so we use different type of queries, data report.

The project is mainly developed for handling different types of tapes. I mainly worked on 3 different functions:

1. BACKUP OF TAPE

Though the storage system are very advanced nowadays. But at the same time the amount of data is also increasing day by day. Thus if the storage system appears to be stored with data that is not been used for a long period of time and is just occupying storage, such data is removed from main storage and its backup is taken up in a tape. Thus emptying the storage system and making it much more efficient and faster in processing.

2. TAPE DUMPING

Thus, there may be multiple data stored and kept in different tapes. If particular data of a tape is required, then that tape's data will be transferred to the main storage system. This process is called as tape dumping. And to keep a track of which particular tape is dumped, so that some other user doesn't dump the same tape again, my software is essential. It helps to avoid redundancy in the main storage.

3. TRANSFERRING OF DATA IN MAIN STORAGE

Suppose the main storage is divided in multiple sections, for e.g. depending upon location. And a particular section is full. Then some amount of unused data from that section is transferred in a more free section, thus data is transferred within the storage itself. Since the particular storage of that data has been changed, the source and destination has to be entered in our program so that it doesn't lead to any issues in the future.
Thus keeping the data protected always.

Chapter 2

IIWS

1. Hardware:

This center consists of Dell and HP Workstations where interpretation of seismic and related exploration data is carried out, centrally connected to a server (Dell R910 also called as WOBr910) and an attached storage (Isilon). Server, Storage and Network Switch are all housed in a separate server room which is equipped with humidity and temperature controllers. All the workstations are spread across 3 main halls and 2 Data viewing Rooms. Other devices connected to this network consist of a group of HP Plotters (used for plotting maps and various other graphs) and Tape Drives (used for reading and writing of tapes for sending/receiving of data in and out of IIWS). This entire group of hardware is protected against Power Failure by a powerful UPS System which reside in a separate UPS room.

Dell servers and tapes in ONGC, Database group, Mumbai



2.2 Software:

Interpretation work is carried out using various Interpretation software like Openworks, Petrosys, Hampson Russell, Paradigm, Petrel, etc. Apart from the Interpretation softwares, there are some mapping software like Bentley and plotting software ZehPlot.

A software used in ONGC



2.3 System Administration:

System Administration activities here consists of:-

1. Maintenance of Interpretation software and their licenses. Keeping a track of licenses' expiration and performing license renewal on time.
2. Updating Interpretation software to their latest versions.
3. Maintaining proper network connectivity between all the workstations, server and all the peripherals like tape drives and plotters
4. Maintaining the database (storage) and keeping track of usage status.
5. Performing Data Backup on regular intervals. This backup is stored in a suitable media and can be restored in case of data loss.
6. Performing writing and reading of tapes for receiving/sending of data in and out of the IIWS.
7. Resolving day-to-day users' issues etc.

Chapter 3

IMPLEMENTATION

3.1 Development of Backup and Tape management system

The project has been developed in HTML (Hyper Text Markup Language), Java Script and CSS (Cascading Style Sheets) with server side scripting language as ASP (Active Server Pages).

The database used here is oracle 11g, which was locally hosted on IIS (Internet Information Services).

LOGIN PAGE:-

This is the 1st page of my project. It allows only authenticated user to enter the main pages. Since every user has its private username and password they can enter through it.

TAPE BACKUP INSERTION PAGE:-

As soon as logged in, the user is directed to the insertion page of tape backup.

This page is mainly responsible for entry of details of the tape that has been backed up.

The form consists of:

1. **Tape No** - A text box field that is used to enter the unique tape no of each tape.
2. **Tape Type**- A dropdown menu comprising of 3 types- LTO-5, LTO-6, 3652
3. **Tape Contents** – A text field with a limit of 200 words, for contents in the tape
4. **Date** - It is a javascript function with helps to select a date from the calendar
5. **Tape Location** – A text field for defining the storage location of the tape.
6. **Remarks** – If any particular remarks to be entered, a text field with a limit of 200 words

Thus, making each tape, different from others.

Each form is validated so that NULL values cannot be entered in the database.

As soon as data is entered, the data is shown in a tabular form (like a label) whose print can be taken if required.

TAPE BACKUP SEARCH PAGE:

This page is mainly used for searching the backed up tapes. It provides user with multiple search options.

1. **Tape No.** – the user enters the tape no and that no is matched with all available tapes in the database and search result is given.
2. **Tape type** – like described above out of the 3 types, any one can be selected and all tapes belonging to that type is shown.
3. **Date** – here To & From date option is given, thus tape between particular dates can be found.
4. **Contents-** if the user doesn't remember any information about the tape, except its topic , he/she can enter a keyword. The word will be matched in whole data base and results related to particular keyword will be displayed.

Thus this tape will help user to find result in various ways and making the human load much lesser and work much more easier.

We have created 4 more similar pages:

1. DUMP INSERTION
2. DUMP SEARCH
3. TRANSFER INSERTION
4. TRANSFER SEARCH

The screen shot of each page has been attached in the next section.

3.2. Screenshots

The login page of the website

A screenshot of a web browser window showing the login page for the Database Group WOB, Mumbai. The page has a blue header with the URL "10.205.148.31:90/wobintranet/bcktape/login.html". The background features a textured, golden-yellow pattern. In the top left corner is the ONGC logo with the text "ओंकर जीसी" above it and "ONGC" below. The main title "DATABASE GROUP WOB, MUMBAI" is centered in large blue capital letters, with "BACKUP & TAPE MANAGEMENT" in smaller black capital letters below it. A central modal dialog box titled "Enter your login id and password" contains fields for "Username" and "Password", and a "Submit" button.

The form for Tape Backup

A screenshot of a web browser window showing the "Tape Backup" form. The page has a green and white abstract background. At the top, there is a navigation bar with tabs: "BACKUP", "DUMP", and "TRANSFER". The "TRANSFER" tab is currently active. Below the tabs, the title "DATABASE GROUP WOB, MUMBAI" is displayed with the ONGC logo. The main content area is titled "Tape Backup". It contains several input fields: "Tape Number" (text input), "Tape Type" (dropdown menu with "select an option" placeholder), "Contents" (text input), "Date" (text input), "Tape Location" (text input), and "Remarks" (text input). A "Submit" button is located at the bottom of the form. The URL "10.205.148.31:90/wobintranet/bcktape/backup.aspx" is visible in the browser's address bar.

Data to be entered in the database

The screenshot shows a web browser window with the URL 10.205.148.31:90/wobintranet/bcktape/backup.aspx. The page title is "TAPE BACKUP". At the top, there are three tabs: "BACKUP", "DUMP", and "TRANSFER". The "BACKUP" tab is selected. The main content area is titled "Tape Backup". It contains the following fields:

| | |
|----------------|---------------|
| Tape Number: | Test |
| Tape Type: | 3652 |
| Contents: | test-contents |
| Date: | 1-Jul-2015 |
| Tape Location: | test-loc |
| Remarks: | test-remarks |

At the bottom right of the form is a "Submit" button.

A printable format of all the details entered

The screenshot shows a web browser window with the URL 10.205.148.31:90/wobintranet/bcktape/backup1.aspx. The page title is "TAPE BACKUP". At the top, there are three tabs: "BACKUP", "DUMP", and "TRANSFER". The "BACKUP" tab is selected. The main content area is titled "ONGC MUMBAI". Below it is a table summarizing the entered data:

| | |
|--------------|---------------|
| Contents: | test-contents |
| Tape Type: | 3652 |
| Tape No.: | Test |
| Backup Date: | 1-Jul-2015 |

Search options provided for searching the data in Tape backup database

The screenshot shows a web browser window titled "TAPE BACKUP" with the URL "10.205.148.31:90/wobintranet/bcktape/backupsearch.aspx". The page header includes the "ONGC" logo and the text "DATABASE GROUP WOB, MUMBAI". A navigation bar at the top has three tabs: "BACKUP", "DUMP", and "TRANSFER". Below the navigation bar is the heading "Tape Backup Search". A section titled "Search by:" contains a dropdown menu labeled "Select to search:" with the following options: "Select by Tape number", "Select by Tape number" (highlighted in blue), "Select by tape type", "Select by date", and "select by tape contents".

Search done by Tape number

The screenshot shows the same web browser window as the previous one, but now the "Select by Tape number" option is selected in the dropdown menu. Below the dropdown, there is a text input field labeled "Enter the tape no.: " containing the value "Test".

Result shown by retrieving matched rows from the database

A screenshot of a web browser window titled "TAPE BACKUP". The URL is 10.205.148.31:90/wobintranet/bcktape/bsearch.tno.aspx. The page displays a table with the following data:

| TAPE NUMBER | TAPE TYPE | TAPE CONTENTS | BACKUP DATE | TAPE LOCATION | REMARKS |
|-------------|-----------|---------------|---------------------|---------------|--------------|
| Test | 3652 | test-contents | 01-07-2015 00:00:00 | test-loc | test-remarks |

Search done by Tape type

A screenshot of a web browser window titled "Tape Backup Search". The URL is 10.205.148.31:90/wobintranet/bcktape/backupsearch.aspx. The page features a header with the ONGC logo and the text "DATABASE GROUP WOB, MUMBAI". It has tabs for "BACKUP", "DUMP", and "TRANSFER". Below the tabs, the title "Tape Backup Search" is displayed. A section labeled "Search by:" contains a dropdown menu "Select to search:" with "Select by Tape number" selected and a "Go" button. Another section labeled "select the tape type:" contains a dropdown menu with the following options: LTO-5, LTO-5, LTO-6, and 3652.

Result shown by retrieving matched rows from the database

| TAPE NUMBER | TAPE TYPE | TAPE CONTENTS | BACKUP DATE | TAPE LOCATION | REMARKS |
|-------------|-----------|---------------|---------------------|---------------|----------|
| T-01 | LTO-5 | test | 20-06-2015 00:00:00 | test-loc1 | test-rem |
| test | LTO-5 | test | 26-06-2015 00:00:00 | tape-loc2 | t |

The form for Tape Dump

rhel - How to clear memo New Tab TAPE DUMP

10.205.148.31:90/wobintranet/bcktape/dump.aspx

For quick access, place your bookmarks here on the bookmarks bar. Import bookmarks now...

DATABASE GROUP WOB, MUMBAI

ONRCS

BACKUP DUMP TRANSFER

Tape Dump

| | |
|----------------------|---|
| Tape Number: | <input type="text"/> |
| Tape Type: | <input type="text"/> Select an option ▾ |
| Received from: | <input type="text"/> |
| Date: | <input type="text"/> <input type="button" value="Clear"/> |
| Stored into: | <input type="text"/> |
| Status of tape: | <input type="text"/> |
| Data (Contents): | <input type="text"/> |
| Data Size: | <input type="text"/> |
| Officer responsible: | <input type="text"/> |
| Remarks: | <input type="text"/> |

Search options provided for searching the data in Tape dump database

The screenshot shows a web browser window titled "TAPE DUMP" with the URL "10.205.148.31:90/wobintranet/bcktape/dumpsearch.aspx". The page header includes the ONGC logo and the text "DATABASE GROUP WOB, MUMBAI". A navigation bar at the top has three tabs: "BACKUP", "DUMP" (which is selected), and "TRANSFER". Below the navigation bar is the title "Tape Dump Search". A section titled "Search by:" contains a dropdown menu labeled "Select to search:" with the following options: "Select by Tape number" (highlighted in blue), "Select by Tape number", "Select by tape type", "Select by date", "Select by stored location", and "Select by contents".

Search done by From date and To date

The screenshot shows the same web browser window and page structure as the previous one. The "DUMP" tab is still selected. The "Search by:" section now includes additional fields: "select the from date:" with a text input containing "1-Jul-2013" and a calendar icon, and "Select the to date:" with a text input containing "31-Jul-2018" and a calendar icon. A "Go" button is located below these date inputs.

Window showing calendar to pick a date



Result shown by retrieving matched rows from the database

| TAPE NUMBER | TAPE TYPE | RECEIVED FROM | DUMP DATE | STORED INTO | TAPE STATUS | DATA | DATA SIZE | OFFICER RESPONSIBLE | REMARKS |
|-------------|-----------|---------------|---------------------|-------------|-------------|--------|-----------|---------------------|---------|
| T-01 | LTO-6 | test | 27-06-2015 00:00:00 | test/ | working | test-c | 50 gb | test sirt | testing |

The form for Data Transfer

The screenshot shows a web browser window titled "TAPE TRANSFER". The URL is 10.205.148.31:90/wobintranet/bcktape/transfer.aspx. The page has a header with the "ONGC" logo and the text "DATABASE GROUP WOB, MUMBAI". Below the header is a navigation bar with three tabs: "BACKUP", "DUMP", and "TRANSFER". The main content area is titled "Transfer" and contains the following fields:

| | |
|--------------|--|
| Data Moved: | <input type="text"/> |
| Source: | <input type="text"/> |
| Destination: | <input type="text"/> |
| Date: | <input type="text"/> <input type="button" value="Calendar"/> |
| Remarks: | <input type="text"/> |

At the bottom right of the form is a "Submit" button.

Search options provided for searching the data in Transfer database

The screenshot shows a web browser window titled "TAPE TRANSFER". The URL is 10.205.148.31:90/wobintranet/bcktape/transfersearch.aspx. The page has a header with the "ONGC" logo and the text "DATABASE GROUP WOB, MUMBAI". Below the header is a navigation bar with three tabs: "BACKUP", "DUMP", and "TRANSFER". The main content area is titled "Transfer Search" and contains the following text:

Search by:

Select to search:

Search done by data moved (keyword match search)

The screenshot shows a web browser window with the URL 10.205.148.31:90/wobintranet/bcktape/transfersearch.aspx. The page title is "TAPE TRANSFER". The header features the "DATABASE GROUP WOB, MUMBAI" logo. A navigation bar at the top has three tabs: "BACKUP", "DUMP", and "TRANSFER". Below the navigation is a section titled "Transfer Search". Underneath it, there is a heading "Search by:" followed by two input fields: "Select to search:" with a dropdown menu set to "Select by Data moved" and a "Go" button, and "select the content keyword:" with a text input field containing the letter "t" and a "Go" button.

Result shown by retrieving matched rows from the database

The screenshot shows a web browser window with the URL 10.205.148.31:90/wobintranet/bcktape/search_tcon.aspx. The page title is "TAPE TRANSFER". The header features the "DATABASE GROUP WOB, MUMBAI" logo. A table is displayed with the following data:

| DATA MOVED | SOURCE | DESTINATION | TRANSFER DATE | REMARKS |
|--|-----------|-------------|---------------------|---------|
| test in the database group ongc mumbai | ongc/xyz/ | ongc/abc/ | 19-06-2015 00:00:00 | testing |

Chapter 4

APPLICATION

This project is mainly used for management and maintenance of multiple tapes. This project can be used in any organization where tapes of any external storage has to be managed and maintained. This project is currently used in ONGC, WOB Mumbai and is hosted on their intranet at 10.205.148.31:90/wobintranet/bcktape/login.html. This reduces the human load as the tape data is no longer required to be manually maintained. This also provides data security as only authenticated users can access it. This also prevents data loss because the data maintained manually is more prone to data loss. The project also provides user friendly interface so that it can easily understood by the employees.

Chapter 5

CONCLUSION

Thus a project for efficient use of tapes is built. This reduces the human load as the tape data is no longer required to be manually maintained. This also provides data security as only authenticated users can access it. This also prevents data loss because the data maintained manually is more prone to data loss.

Thus, the project will help in providing features like computerized system, Friendly user interface, Time saving, Save paper work, connecting to database so we use different type of queries, data report etc.