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**NON-ASBESTOS
GASKET/PACKING
PROJECT**

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**PRESENTATION TO
TEXAS OPERATING BOARD/
EXPANDED STAFF**

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**JANNA L. ELLIS
MATERIALS TECHNOLOGY
JUNE 13, 1988**

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**NON-ASBESTOS GASKET/PACKING PROJECT
PRESENTATION TO TEXAS OPERATING BOARD/EXPANDED STAFF**

PROJECT STATEMENT:

THE PROJECT TO FIND NON-ASBESTOS GASKET AND PACKING MATERIALS BEGAN JANUARY 1987. PROJECT OBJECTIVES ARE AS FOLLOWS:

1. DETERMINE SUITABLE NON-ASBESTOS GASKET AND PACKING MATERIALS TO PERFORM EFFECTIVELY, SATISFY PLANT, ENVIRONMENTAL PERSONNEL, AND SAFETY CONCERNS.
2. REVISE DOW CHEMICAL ENGINEERING SPECIFICATIONS AND BLOCK PIPING SPECIFICATIONS TO REFLECT CHANGE TO NON-ASBESTOS MATERIALS.
3. COMMUNICATE INFORMATION TO DOW PERSONNEL: GLOBAL

PROJECT STATUS: EARLY STAGES

ORIGINAL PLAN TO DETERMINE SUITABLE ALTERNATIVES BY ANALYSIS OF PRODUCT LITERATURE WAS DISCONTINUED DUE TO PUBLISHED DISCREPANCIES AND LACK OF APPROPRIATE DATA. FOR THIS REASON, POTENTIAL ALTERNATIVES WERE REQUIRED TO HAVE VERIFIED FIELD PERFORMANCE RECORDS AS MEANS OF DETERMINING POTENTIAL PERFORMANCE.

PROJECT STATUS: CURRENT

THERE ARE DOW-APPROVED (TEXAS OPERATIONS) NON-ASBESTOS GASKETS FOR AIR, WATER, NITROGEN, AND SUPERHEATED 150#, 235#, 400#, 475# STEAM. DOW TEXAS OPERATIONS ENGINEERING SPECIFICATIONS HAVE BEEN REVISED TO REFLECT CHANGE TO NON-ASBESTOS.

CHLORINATED ETHANES PRODUCTS (CEP) CONVERTED TO NON-ASBESTOS GASKETS DURING THEIR MARCH 1988 SHUTDOWN WITH EXCEPTION TO A FEW HIGH TEMPERATURE APPLICATIONS STILL EMPLOYING ASBESTOS. NON-ASBESTOS GASKETS WILL BE INCLUDED IN UPCOMING CEP BLOCK PIPING SPECIFICATION REVISIONS. SERVICES RECEIVING THE NEW ALTERNATIVES INCLUDE ALPHA-DI, ALPHA-TRI, BETA-TRI, EDC, HCL, AND VINYLIDENE CHLORIDE.

CURRENTLY, THERE ARE 83 DOCUMENTED FIELD TESTS WITH NON-ASBESTOS MATERIALS. BOTH FIELD TEST RECORDS AND RECOMMENDATIONS ARE ENTERED IN A DATA-BASE ON THE ENGINEERING/SCIENTIFIC VAXCLUSTER. THIS DATA-BASE ENABLES DOW PERSONNEL SEEKING ALTERNATIVES TO SEARCH THE DATA-BASE FOR TEST RECORDS OR RECOMMENDATIONS FOR SIMILAR APPLICATIONS.

A COMPREHENSIVE PROGRAM HAS BEEN DEVELOPED DUE TO NEED FOR TIMELY PROJECT COMPLETION (PROPOSED COMPLETION OF DATA ENTRY INTO DATA-BASE BY GENERAL COORDINATOR IS JULY 1989), TRUE ASBESTOS COST, AND TIGHTENING OF LOCAL ASBESTOS SUPPLY.

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COMPREHENSIVE ACTION PLAN: BRIEF OVERVIEW

1. PROJECT PARTICIPATION IS OBTAINED THROUGH MANAGEMENT SUPPORT. DIRECTLY INVOLVES:
 - A. PRODUCT TECHNOLOGY CENTERS
 - B. PRODUCTION SUPERINTENDENTS
 - C. MAINTENANCE SUPERINTENDENTS
 - D. SAFETY DIRECTORS
 - E. GENERAL COORDINATOR/MAINTENANCE TECHNOLOGY CENTER
 - F. DIVISION SITE COORDINATORS
 - G. BLOCK FIELD REPRESENTATIVES
2. PRODUCT TECHNOLOGY CENTERS ORGANIZE MEETING WITH PRODUCTION SUPERINTENDENT(S), MAINTENANCE SUPERINTENDENT(S), AND SAFETY DIRECTOR(S). BY GROUP CONSENSUS, THE FOLLOWING ARE DETERMINED:
 - A. SERVICES REQUIRING ASBESTOS REPLACEMENTS
 - B. PERFORMANCE CRITERIA OF NON-ASBESTOS MATERIALS
 - C. TESTS NECESSARY TO VERIFY FIELD PERFORMANCE
 - D. PERFORMANCE MEASUREMENTS OF TESTS
 - E. DESIGNATED TEST LOCATIONS THROUGHOUT DOW NORTH AMERICA
 - F. NON-ASBESTOS TEST MATERIALS
3. TESTS ARE EXECUTED, DOCUMENTED, AND ANALYZED AT DESIGNATED TEST SITES.
4. PROGRESS IS COMMUNICATED GLOBALLY THROUGH THE MAINTENANCE TECHNOLOGY CENTER AND DOCUMENTED IN A VAX GASKET/PACKING DATA-BASE.
5. PRODUCT TECHNOLOGY CENTER RECOMMENDS NON-ASBESTOS GASKETS/PACKING BASED ON PRE-DETERMINED PERFORMANCE CRITERIA AND DOCUMENTED RESULTS.
6. ENGINEERING SPECIFICATIONS ARE REVISED TO NON-ASBESTOS. PRODUCT TECHNOLOGY CENTERS COMMUNICATE RECOMMENDED MATERIALS TO ENGINEERING SERVICES FOR DIVISION WIDE REVISIONS. INDIVIDUAL BLOCKS TAKE RESPONSIBILITY FOR BLOCK PIPING SPECIFICATIONS REVISIONS.

PROJECT SUCCESS REQUIREMENTS:

SUCCESS OF COMPREHENSIVE PLAN IS DEPENDENT UPON MANAGEMENT SUPPORT TO:

1. ESTABLISH PRIORITY FOR PROJECT COMPLETION
2. SET PROJECT DEADLINES AT PLANT LEVEL

ATTACHED LITERATURE:

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MANPOWER/AREAS OF RESPONSIBILITY.....PAGE 7
SERVICES WITH NON-ASBESTOS FIELD TESTS.....PAGE 10

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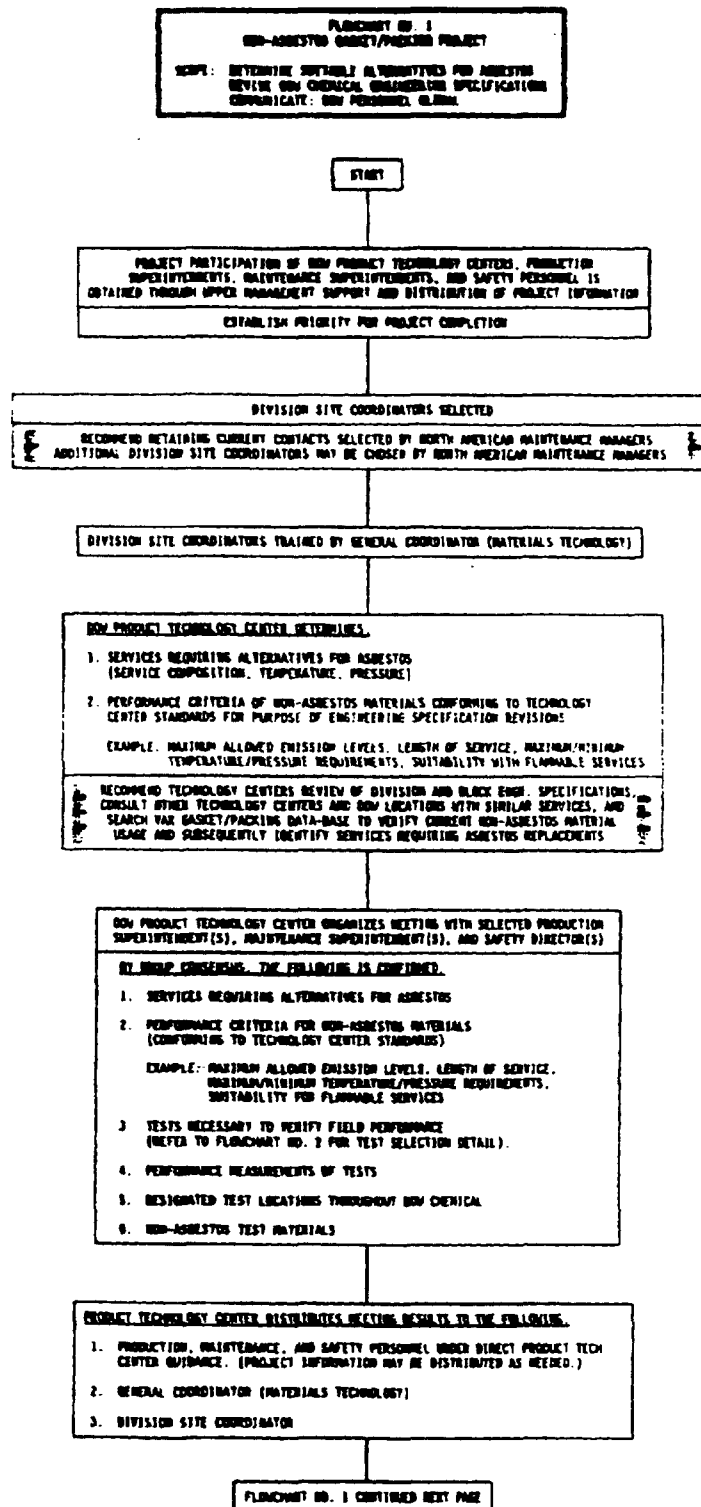
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**NON-ASBESTOS GASKET/PACKING PROJECT
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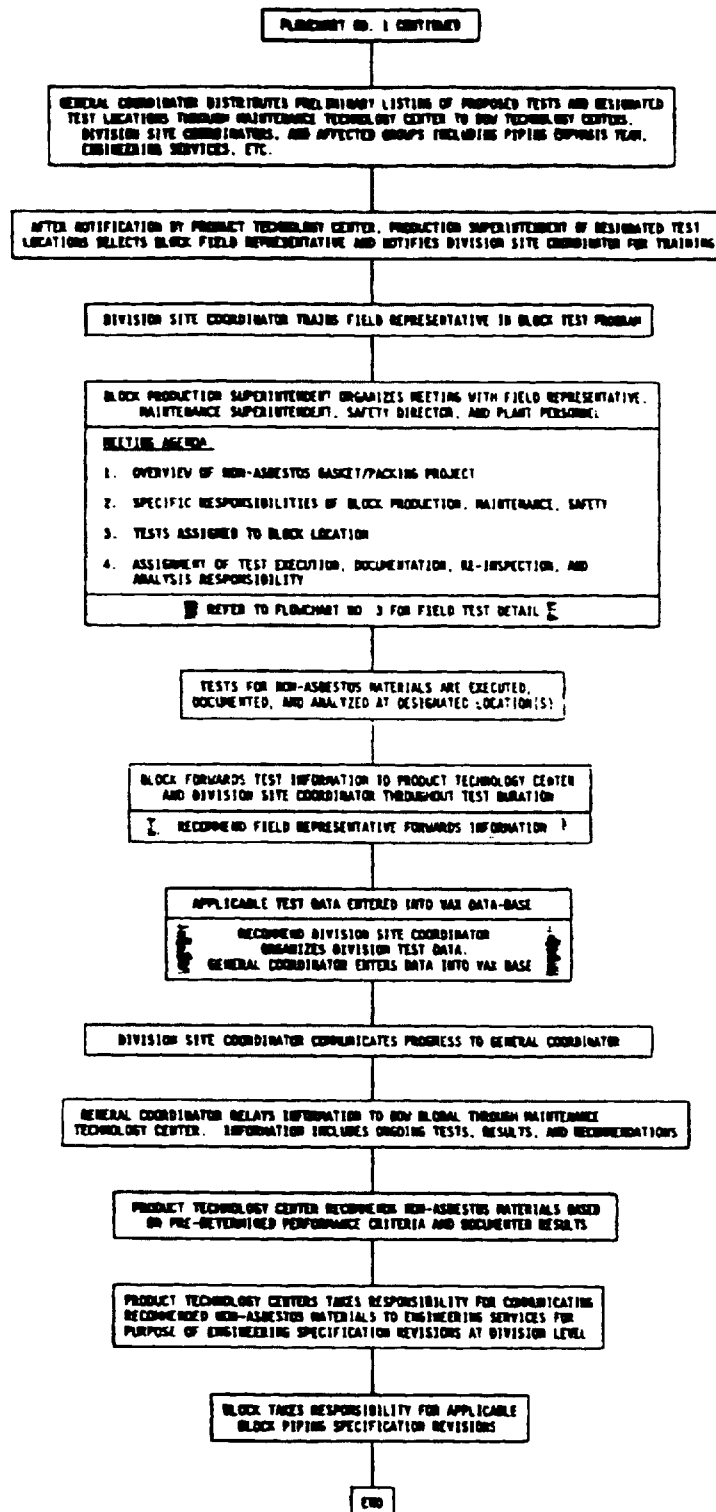
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**NON-ASBESTOS BASKET/PACKING PROJECT
PRESENTATION TO TEXAS OPERATING BOARD/EXPANDED STAFF**

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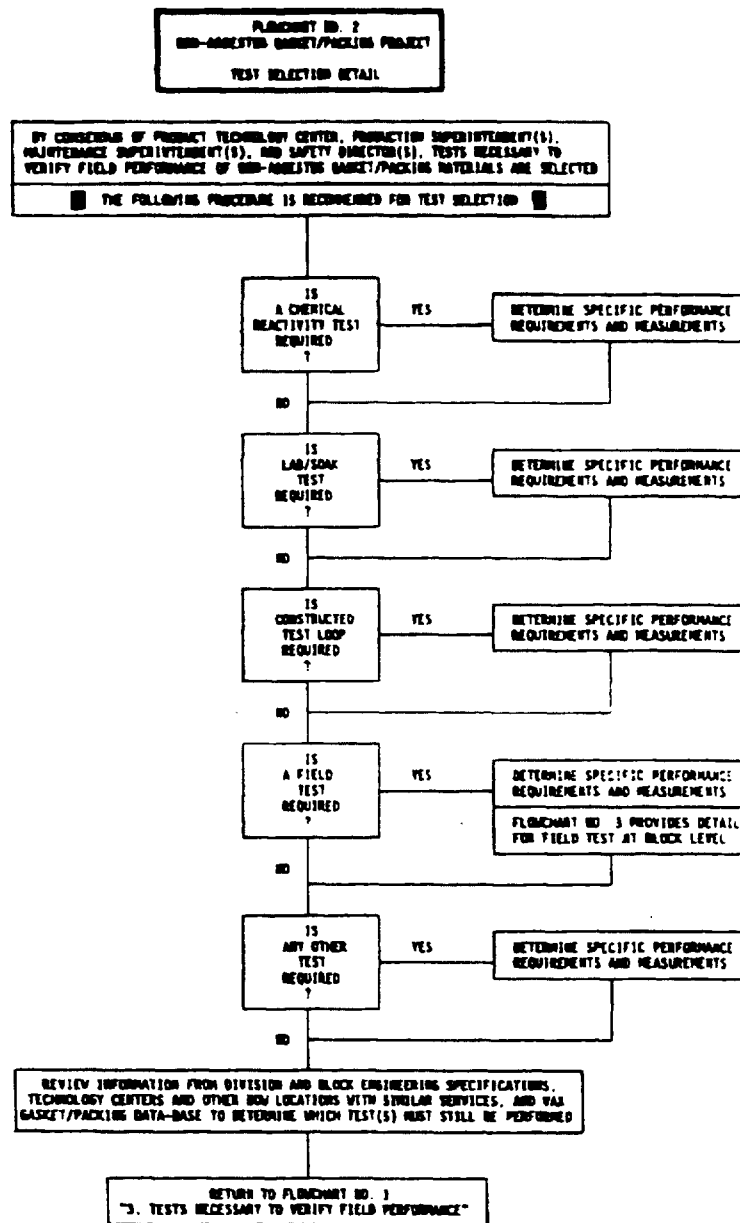
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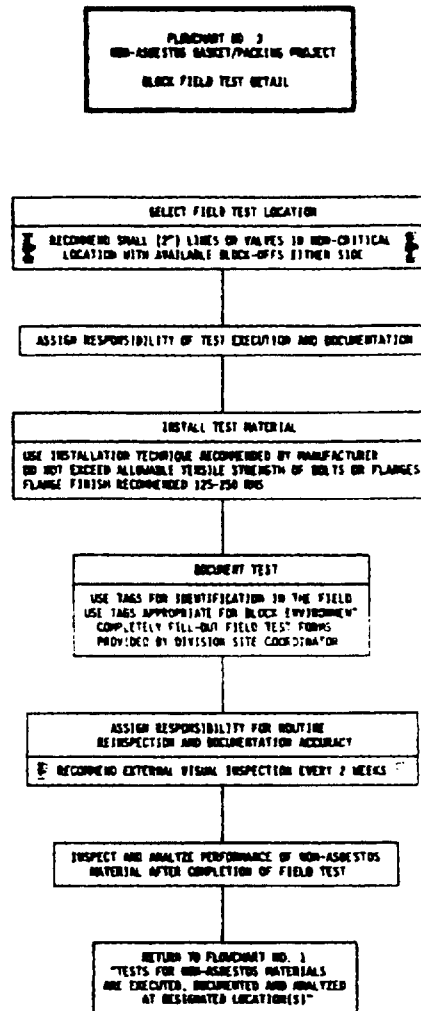
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**NON-ASBESTOS GASKET/PACKING PROJECT
PRESENTATION TO TEXAS OPERATING BOARD/EXPANDED STAFF**

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⚡ REFERS TO RECOMMENDED PROCEDURE

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MANPOWER/AREAS OF RESPONSIBILITY

MANAGEMENT:

1. PROVIDE VERBAL/WRITTEN SUPPORT TO OBTAIN PROJECT PARTICIPATION.

PERSONNEL INVOLVED IN PROJECT INCLUDE:

DOW PRODUCT TECHNOLOGY CENTERS
PRODUCTION SUPERINTENDENTS
MAINTENANCE SUPERINTENDENTS
SAFETY DIRECTORS
GENERAL COORDINATOR/MAINTENANCE TECHNOLOGY CENTER
DIVISION SITE COORDINATORS
BLOCK FIELD REPRESENTATIVES

2. ESTABLISH PRIORITY FOR PROJECT COMPLETION.
3. SET PROJECT DEADLINES AT PLANT LEVEL.

PRODUCT TECHNOLOGY CENTERS:

1. IDENTIFY SERVICES REQUIRING REPLACEMENTS FOR ASBESTOS GASKET/PACKING. INCLUDE SERVICE COMPOSITION, TEMPERATURE, AND PRESSURE RANGES.

CONSULT THE FOLLOWING TO VERIFY CURRENT NON-ASBESTOS USAGE AND IDENTIFY SERVICES REQUIRING ASBESTOS REPLACEMENTS:

- A. DIVISION AND BLOCK ENGINEERING SPECIFICATIONS
 - B. TECHNOLOGY CENTERS WITH SIMILAR SERVICES
 - C. DOW LOCATIONS WITH SIMILAR SERVICES
 - D. GASKET/PACKING DATA-BASE (ENGINEERING/SCIENTIFIC VAX)
2. SPECIFY PERFORMANCE CRITERIA OF NON-ASBESTOS MATERIALS CONFORMING TO TECHNOLOGY CENTER STANDARDS FOR PURPOSE OF ENGINEERING SPECIFICATION REVISION.

EXAMPLES: MAXIMUM ALLOWED EMISSION LEVEL, LENGTH OF SERVICE,
MAXIMUM/MINIMUM TEMPERATURE/PRESSURE REQUIREMENTS,
SUITABILITY FOR FLAMMABLE SERVICES
 3. PRODUCT TECHNOLOGY CENTER ORGANIZES MEETING WITH PRODUCTION SUPERINTENDENT(S), MAINTENANCE SUPERINTENDENT(S), AND SAFETY DIRECTOR(S). BY GROUP CONSENSUS, CONFIRM THE FOLLOWING:

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PRODUCT TECHNOLOGY CENTERS, CONTINUED:

- A. SERVICES REQUIRING REPLACEMENTS FOR ASBESTOS
 - B. PERFORMANCE CRITERIA OF NON-ASBESTOS
 - C. TESTS NECESSARY TO VERIFY FIELD PERFORMANCE OF NON-ASBESTOS
 - D. PERFORMANCE MEASUREMENTS OF TESTS
 - E. DESIGNATED TEST LOCATIONS THROUGHOUT DOW CHEMICAL
 - F. NON-ASBESTOS TEST MATERIALS
4. DISTRIBUTE RESULTS FROM CONSENSUS TO PRODUCTION, MAINTENANCE, AND SAFETY PERSONNEL UNDER TECHNOLOGY CENTER GUIDANCE. DISTRIBUTE PROJECT INFORMATION AS NEEDED.
 5. DISTRIBUTE RESULTS FROM CONSENSUS INCLUDING PRELIMINARY LISTING OF PROPOSED TESTS AND DESIGNATED TEST LOCATIONS TO DIVISION SITE COORDINATOR AND GENERAL COORDINATOR.
 6. FOLLOW UP ON TEST PROGRESS AT DESIGNATED SITES.
 7. RECOMMEND NON-ASBESTOS MATERIALS ON BASIS OF PRE-DETERMINED PERFORMANCE CRITERIA AND DOCUMENTED RESULTS.
 8. TAKE RESPONSIBILITY OF COMMUNICATING RECOMMENDED NON-ASBESTOS MATERIALS TO ENGINEERING SERVICES FOR PURPOSE OF ENGINEERING SPECIFICATIONS REVISIONS. FOLLOW-UP ON PROPOSED SPECIFICATIONS CHANGES.
 9. OFFER ASSISTANCE TO BLOCK FOR BLOCK PIPING SPECIFICATION REVISIONS.

GENERAL COORDINATOR (MATERIALS TECHNOLOGY):

GENERAL COORDINATOR IS CURRENTLY BASED IN TEXAS OPERATIONS AND ALSO SERVES AS DIVISION SITE COORDINATOR FOR TEXAS OPERATIONS.

1. NON-ASBESTOS GASKET/PACKING FOCAL POINT FOR DOW CHEMICAL: GLOBAL
2. MAINTAIN COMMUNICATIONS: GLOBAL
UTILIZE MAINTENANCE TECHNOLOGY CENTER AS OFFICIAL COMMUNICATIONS CENTER.
3. VAX GASKET/PACKING DATA-BASE MAINTENANCE.
4. DATA-BASE ENTRY INTO FAX GASKET/PACKING DATA-BASE.
5. INVESTIGATE NEW MATERIALS.
6. TRAIN DIVISION SITE COORDINATORS.
7. TRAIN FIELD REPRESENTATIVES AS REQUESTED BY TEXAS OPERATIONS PRODUCTION SUPERINTENDENTS.

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DIVISION SITE COORDINATORS:

1. BE KNOWLEDGEABLE OF COMPREHENSIVE PLAN THROUGH TRAINING BY GENERAL COORDINATOR.
2. ORGANIZE BLOCK TEST DATA FOR PURPOSE OF VAX DATA-BASE ENTRY. FORWARD DATA TO GENERAL COORDINATOR FOR INPUT INTO DATA-BASE.
3. COMMUNICATE BLOCK PROGRESS TO GENERAL COORDINATOR.
4. SERVE AS DIVISION FOCAL POINT.
5. TRAIN FIELD REPRESENTATIVES AS REQUESTED BY DIVISION PRODUCTION SUPERINTENDENTS.

PRODUCTION SUPERINTENDENT:

1. WORK AS REQUESTED WITH TECHNOLOGY CENTERS IN DETERMINING SERVICES REQUIRING REPLACEMENTS FOR ASBESTOS, PERFORMANCE CRITERIA, NECESSARY TESTS, PERFORMANCE MEASUREMENTS, DESIGNATED TEST SITES, AND NON-ASBESTOS TEST MATERIALS.
2. BE COOPERATIVE AS DESIGNATED TEST SITE.
3. CHOOSE FIELD REPRESENTATIVE FOR BLOCK AFTER SELECTION AS DESIGNATED TEST SITE.
4. NOTIFY DIVISION SITE COORDINATOR FOR TRAINING OF FIELD REPRESENTATIVE.
5. ORGANIZE MEETING WITH MAINTENANCE, SAFETY, AND PLANT PERSONNEL TO DISCUSS THE FOLLOWING:
 - A. OVERVIEW OF NON-ASBESTOS GASKET/PACKING PROJECT
 - B. SPECIFIC RESPONSIBILITIES OF BLOCK PRODUCTION, MAINTENANCE, AND SAFETY PERSONNEL
 - C. TESTS ASSIGNED TO BLOCK LOCATION
 - D. ASSIGNMENT OF TESTS EXECUTION, DOCUMENTATION, RE-INSPECTION, AND ANALYSIS RESPONSIBILITY
6. FORWARD TEST INFORMATION TO PRODUCT TECHNOLOGY CENTERS AND DIVISION SITE COORDINATOR THROUGHOUT TEST DURATION.

RECOMMENDED PROCEDURE: FIELD REPRESENTATIVE FORWARDS INFORMATION. DOCUMENT FIELD TEST DATA AS COMPLETED INSTALLATION OR REINSPECTION FORMS. (FORMS ARE PROVIDED BY DIVISION SITE COORDINATOR.)

7. TAKE RESPONSIBILITY FOR BLOCK PIPING SPECIFICATION REVISIONS. NON-ASBESTOS MATERIALS ARE RECOMMENDED BY TECHNOLOGY CENTER.

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**NON-ASBESTOS GASKET/PACKING PROJECT
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MAINTENANCE MANAGERS:

1. ASSIGN DIVISION SITE COORDINATORS.

FIELD REPRESENTATIVES:*

1. KNOWLEDGEABLE OF COMPREHENSIVE PROGRAM THROUGH TRAINING BY DIVISION SITE COORDINATOR.
2. NON-ASBESTOS GASKET/PACKING FOCAL POINT FOR BLOCK.
3. RESPONSIBLE FOR TEST DOCUMENTATION ACCURACY.
4. RESPONSIBLE FOR CONSISTENT RE-INSPECTION DOCUMENTATION.
5. FORWARD TEST INFORMATION TO PRODUCT TECHNOLOGY CENTER AND DIVISION SITE COORDINATOR.

RECOMMENDED PROCEDURE: DOCUMENT FIELD TEST DATA AS COMPLETED INSTALLATION OR REINSPECTION FORMS. (FORMS ARE PROVIDED BY DIVISION SITE COORDINATOR.)

- * EACH PLANT SELECTED AS A DESIGNATED TEST SITE REQUIRES A FIELD REPRESENTATIVE.

SERVICES WITH NON-ASBESTOS FIELD TESTS:

ACETONE
ACRYLIC ACID
ALPHA-METHYL-STYRENE
BRINE
CARBON DIOXIDE
CAUSTIC
CELL EFFLUENT
CHLORINE
CONDENSATE
CUMENE
DICHLOROHYDRIN
EPOXY RESIN
ETHYLENE

LUBE OIL
METHANE
NATURAL GAS
OXALIC ACID
PHENOL
POLYGLYCOL
PROPYLENE
SODIUM CARBONATE
SODIUM PHENATE
STEAM
SULFUR DIOXIDE
SULFURIC ACID
WASTE OIL

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