

OVERALL APPRAISAL, STRATEGY CONSIDERATIONS
AND RECOMMENDATIONS OF THE TASK FORCE

It is recognized that the Departments have given attention to the Pyranol issue for some period of time. Plans in place and periodic assessments of the situation, as presented in Section VII - Position Papers, attest to this fact.

The principle contribution of the Task Force has been to add knowledge in certain areas, provide further definition of the alternatives, and by distilling and organizing the inputs to present general management a comparative display of the trade-offs.

This portion of the Executive Summary seeks to aid general management further by compiling the highlights of the most significant data in an overall appraisal, the strategy considerations, and key recommendations.

Overall Appraisal

Four factors characterize the current state of affairs:

- 1) The situation will remain fluid for some time;
- 2) An alternative more favorable than Continuing with Pyranol has not yet been clearly demonstrated;
- 3) The need for PCB effluent control facilities and the associated ability to operate plants will be unaffected by converting to an alternative to Pyranol;
- 4) Time to act is rapidly shortening.

There is the possibility that the PCB control requirements will not be determined in the second quarter 1974 for compliance by July 1975. The process may extend well into - or throughout - the year 1975 for these reasons:

- The proposed standards (12-27-73) are unreasonable by orders of magnitude;
- Determination of the standards may be based more on emotionalism than on scientific data;
- At the pre-hearing (1-25-74) the industries' legal representatives generally went on record as being prepared to go to court if the proposed standards are not revised to valid acceptability.

For planning purposes, however, it should be assumed that external pressures may force discontinuing the use of Pyranol:

- The EPA is under great pressure by environmentalist groups (e.g. suits now in court);

- Discontinuance may have to occur as early as July 1975 if industry efforts (legal and persuasion) are unsuccessful in obtaining acceptable standards or compliance date deferment;
- Even if standards acceptable to industry are obtained, discontinuance sometime after July 1975 may be forced, depending on end user reaction to the control requirements and the posture taken by the (*)Service Shops.

The investment and operating expense of containment facilities for PCB very well may have to be incurred and the ability to continue plant operations may be impaired even if manufacturing with Pyranol is discontinued. There is the residual PCB in the earth at the plant sites due to past years of operations. Leaching of the residual PCB is the major source of PCB discharge. As the Effluent Standards now stand, this discharge must be in compliance by July 1975.

Should external influences not force discontinuing the use of Pyranol, then the central issue becomes the exposure associated with spills, - major spills that may be costly and the high frequency of minor spills (seepage) that may promote customer resistance:

- Over five years there is a 37% chance of no major spills, a 37% chance of one, and a 26% chance of two or more for the three Departments under the most optimistic assumptions.
- The cost of a major spill is unpredictable but is not typically illustrated by the 1973 Tennessee spill of \$200 000 (three 1500 gallon units were involved whereas 90% of MTPD output is in 94-243 gallon units);
- Regarding major spills, there needs to be taken into account welds, gaskets, and the accountability of transportation companies and customers. The six major spills recorded during the past five years were due to the following causes:

	<u>Weld</u>	<u>Gasket</u>	<u>Trucker</u>	<u>Customer</u>	<u>Total</u>
MTPD	2		1	1	4
DTPD		1			1
PTPD	<u>1</u>	<u>—</u>	<u>—</u>	<u>—</u>	<u>1</u>
	3	1	1	1	6

- The predominant cause of minor spills on customers' premises also is welds and gaskets, however, the consequences are that (a) in 50% of the cases not one drop of Pyranol reaches the ground and (b) in 90% of the remaining cases the liquid reaching the ground does not exceed one teaspoonful.

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(*) According to A. P. Christenson (2-5-74), the Apparatus Service Division has no plan to withdraw from Pyranol, will maintain a low profile, and foresees possibly a marketing opportunity in disposing of Pyranol for its customers.

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No one alternative is expected to serve the three Departments involved. Power Transformer may have to pursue a route different from the one that best fits Medium Transformer and Distribution Transformer:

- The potentially common alternative - Develop Substitute Liquid - presently rates low probability of becoming acceptable except for Power Transformer;
- In this event Convert to Dry-type Transformers is the alternative for Medium Transformer and Distribution Transformer.

The dry-type transformer alternative has prospects of being a costly action:

- Prime costs will be increased upwards of 30% and, until overcome by increased selling prices and/or cost reductions, might reduce (annual rate) by around 20% the total net income of Medium Transformer;
- Timely and sufficient increases in selling prices may be possible even though significantly increased competition may be attracted; today Medium Transformer participates strongly and profitability with this same potential competition in the present dry-type market;
- Customers will have to be persuaded to accept a lower-capability transformer at a higher selling price;
- Distribution Transformer has no existing designs nor facilities with which to serve the Pyranol market. Design and development for dry-type transformers to serve the existing Pyranol customers is estimated at \$400 000, - and facilities at \$200 000. A study team will provide more clearly the extent of a program by March 6, 1974.

However, the present dry-type transformer market is an opportunity for both Departments:

- This profitable market for Medium Transformer is growing; additional facilities are required and have been provided in the proposed October 1973 Facilities Plan (\$585 000);
- Distribution Transformer is participating in this market area with oil-filled but not dry-type transformers. This market area represents the heart of the DT business and suggests a vulnerability if dry-type transformers accelerate their penetration as a result of the Pyranol shift and increased customer experience with dry-type transformers. This market segment is larger than the Pyranol market segment and is presently growing at an annual rate of 11% and the rate could increase.

The present timetables of the contingency plans of Medium Transformer and Distribution Transformer have been made virtually unrealistic as to accomplishing full-production conversion from Pyranol to an alternative by July 1975 (figure 1):

- Develop Substitute Liquid -- The extent of product redesign and manufacturing changes that will be required is scheduled not to be known until June 1974; one year may be insufficient time in which to accomplish this work;
- Convert to Dry-type Transformers -- To have Rome facilities ready by July 1975 requires the "go" decision today; work must begin in the second quarter because brick-and-mortar is involved. Following established procedures, PAR approval cannot be obtained in time;

Distribution Transformer must start immediately to gain technology know-how from other parts of the Company (Ft. Wayne and Rome) and apply it to designs for serving the existing market segments. The know-how transfer will be facilitated in that the GYRO Laboratory responsible for the development of dry-type technology for the Division is also located in Pittsfield with the affected DT engineering and manufacturing operations. However, the extent of the programs for development-design and facilities are not currently known; these determinations are due in March 1974.

Strategy Considerations

1. Press "Continue with Pyranol" as the primary objective:
 - Employ legal action if the final Effluent Standards issued in the second quarter 1974 are unreasonable. Also, seek injunctive relief from the compliance date of July 1975, if only to buy time (should conversion become inevitable, it must be orderly in the interests of customers, employees and the businesses);
 - Examine the practicability of increasing the integrity of welds and gaskets, or the feasibility of limiting sales to units no larger than 2500 or 3750 KVA.
 - Investigate the availability and cost of insuring against claims by customers and third parties due to spill accidents;
 - Maintain up-to-date knowledge of the strategy and plans of the Apparatus Service Division (Service Shops).
2. Power Transformer pursue with customers early clarification, understanding and acceptance of its contingency alternatives of Standard Oil-fill and Substitute Liquid, stressing the implications of the July 1975 compliance date (e.g. no Pyranol transformers).
3. Because "Convert to Dry-type Transformers" is currently the most viable alternative, act expeditiously to utilize the present dry-type transformer market opportunity in strengthening the base for this alternative:
 - Make timely installation of facilities (including brick-and-mortar) such that incremental equipment additions can later accommodate the conversion from Pyranol;

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- Begin necessary product and process development programs;
 - Formulate marketing programs needed to implement a transition from Pyranol;
 - Make an economic analysis of this alternative to guide the development and marketing programs, and business strategy.
4. Accelerate the "Develop Substitute Liquid" program:
- For its potentiality of becoming the most viable alternative;
 - As early as possible make an economic comparison with the dry-type alternative, commencing with rough evaluations.

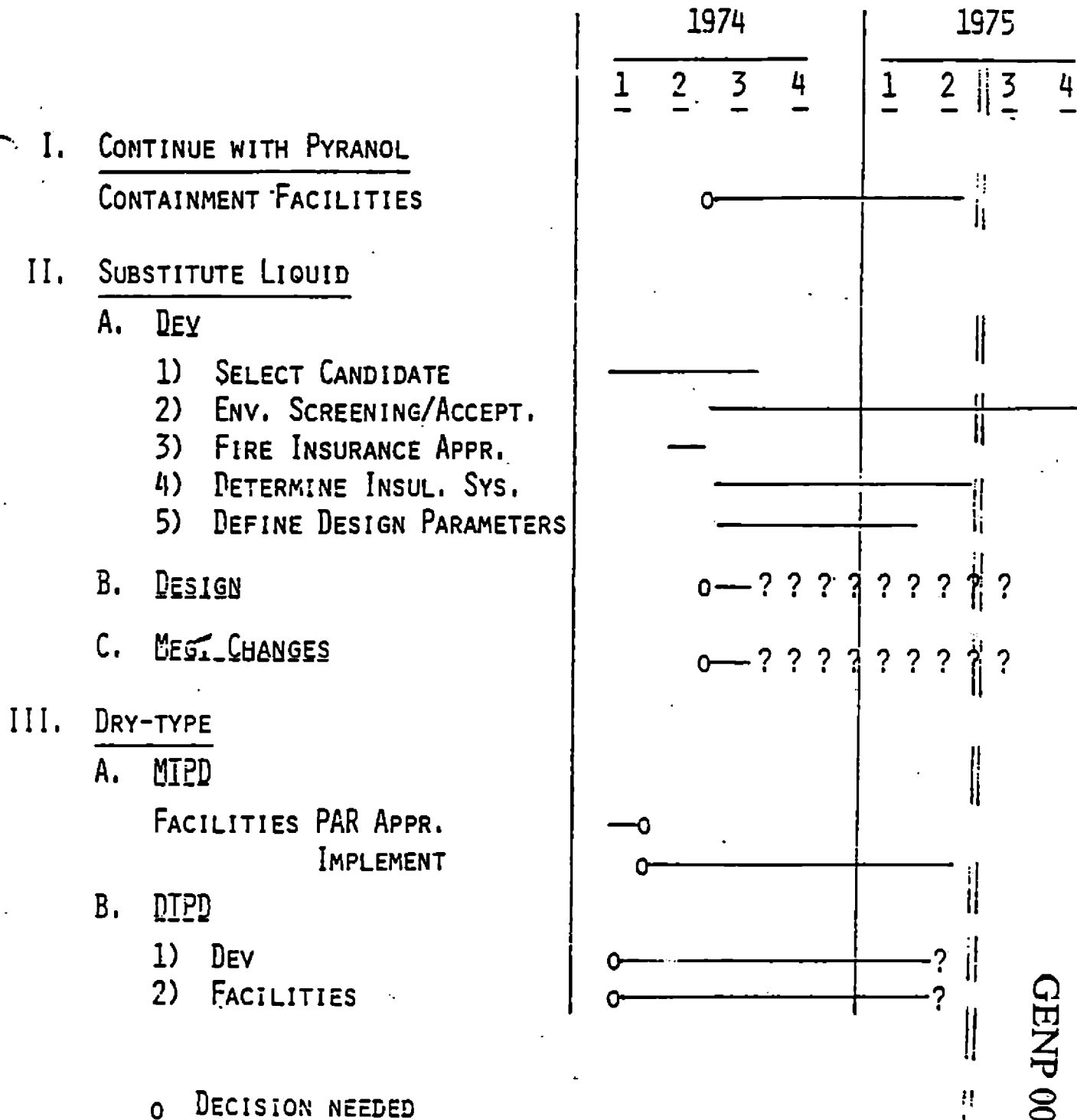
Recommendations

1. Assign immediately to the Strategic Planner Large Transformers responsibility for
 - Project leadership
 - Integration of planning and implementation follow-up
 - Liaison with other Company components regarding the Company response program with EPA.
2. Prepare a master timetable of activity completion dates and decision trigger points.
3. Medium Transformer begin in April the installation of additional dry-type transformer facilities to serve the present market (opportunity for a satellite plant?).
4. Determine the means for, and feasibility of, introducing favorable non-industry influences in the response program with EPA:
 - Political representatives - C. J. Meloun
 - IEEE - T. H. Lee
5. Prepare right away a comprehensive comparative evaluation of Continue with Pyranol and Convert to Dry-type Transformers as illustrated in figure 2.
6. Institute bi-monthly status reviews of the total program, jointly conducted by C. J. Meloun, R. T. Morris, I. J. Petersen and T. H. Lee and beginning no later than March 1974.

Figure 1

TIMETABLE FOR
ALTERNATIVES

COMPLIANCE
DATE



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(Illustration)

ASSESSMENT OF COMPARATIVE DATA RE: MTPD AND DTPD

I. Factors

A. Facilities

Continue with Pyranol
Containment Facility: MTPD \$0.5 million
DTPD 0.5
Total \$1.0 million
Must begin 3rd qtr. 1974

Convert to Dry-type Transformer
Production Facility: MTPD \$1.0
DTPD 0.5
Total \$1.2
Must begin 2nd qtr. 1974

B. Product Available 7/75

Yes

Reasonable Probability:
MTPD extend existing technology
DTPD draw on MTPD and develop

C. Costs

1. Dev./Design
2. Increased Operating

None
Containment Facility \$150 000/yr.
OSHA Req'ts. ?
Major Spills 50 000-200 000/yr. avg.

\$400 000 - 1.2 million
Prime costs upwards \$1.5 million
(Subject long term to
reduction via development)

D. Competition

Only one competitor - W

1. W now has broader capability
2. Five other competitors likely

E. Customer Implications

1. Must comply with EPA Effluent Standards
2. Service Shops must comply

1. No environmental problems re:
2. Product larger with reduced capabilities (at higher price)
3. Primary substations must go to oil-fill plus concrete vaults

F. Risks

1. Cannot raise prices to cover increased operating costs.
2. Customers demand substitute product (e.g. PG&E going to dry-type)
3. Major spills chances: 82% none in full year; 37% none over 5 years
4. Welds and gaskets not removed as major cause of leaks (minor & major)
(Welds responsible for 2 of 5 major spills recorded in past 5 years, -including Tennessee)
5. Adverse publicity no matter how seldom a major spill

1. 22% profitability loss for MTPD if -
a) Prices cannot be raised as much as Pyranol due to competition
b) Prime costs are not reduced (Relates to C.2. above)
2. STPD acquires more market of DTPD
3. Opportunity: Larger and fast dry-type market not now fully

II. Assessment

Reasonable risk if -

- Welds and gaskets removed as predominant cause of leaks,
 - Customers willing to comply with EPA Effluent Standards
 - Monsanto willing to stay
- Big IF's - but -
- Highly profitable business with only one competitor
 - Potential costs via major spills may be less than known increase in prime costs via dry-type
 - Containment facilities may meet Effluent Standards if EPA makes allowance for "residuals"

Minimal risk re: Effluent Standards
Some risk re: OSHA (e.g. asbestos)
Fairly high risks re: profitability

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