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WORKSHOP REPORT  
POTENTIAL FOR RESOLVING ENVIRONMENTAL  
AND REGULATORY ISSUES THROUGH DEMONSTRATIONS

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The 15 participants at the workshop included representation from countries other than the United States allowing an interchange on an international basis. The absence of regulatory agencies precluded the benefit of their perspectives. For balance the environmental issues do need review from the perspectives of the:

- producer,
- operator,
- regulator.

In general the panel concurred in the value of demonstrations to provide full scale experience necessary to resolve preliminary environmental concerns or identify issues needing further resolution. There was some differences in opinion as to the size needed for a demonstration. A basic guideline was suggested which recommended the size reflect full-scale operation of the components being tested.

Transferability of the experiences between regions (counties, states, countries) for application was recognized as desirable but questioned as to its ability to satisfy the regulators. This pointed out that site-specific needs cannot be ignored or under-estimated. Examples were given of differences in attitudes between counties and states.

The representative from Japan indicated the need for large demonstrations to properly evaluate the economics and true effects of geothermal development on the environment. While esthetics have received less notice in these early stages of development, Japan is facing the need to utilize geothermal resources in National Parks, where esthetics will be a prime issue.

In recognition of the esthetic issue consideration is being given to semi-

underground designs, equipment height reductions, landscaping and smaller plant areas. (5-7 hectares).

There was universal agreement that regulatory agencies should recognize that resolution of environmental concerns will be an ongoing process of the operating unit and make allowances to permit development to proceed with subsequent resolution of the problem.

Mexico's experience supports the benefits to be gained by the balanced decisions of the regulators to allow demonstrations to focus on problem areas for subsequent resolution.

Concern was expressed about the apparent overemphasis on seismic design requirements particularly the repetition in application after application. In view of the potential risk to the public it was felt the seismic requirements are excessive.

Finally, demonstrations provide invaluable assistance to KGRA development from the environmental perspective, provided the demonstration has a sound pre-operational environmental data baseline and a post-operational monitoring program to validate preliminary environmental hypotheses.

REGULATION SUMMARY

There is a general consensus that the Regulatory Agencies and their regulations have a significant influence in the selection of geothermal demonstration plant size and location. Also this influence has generally had a more negative connotation, although there are specific instances where this is not the case.

It is a matter of record that some authorities have encouraged stricter

limitation after applied technologies have made significant reductions in H<sub>2</sub>S emissions. On the other hand the Imperial County example of informed and intelligent preparation for the development of a new resource, indicates that development can proceed without excessive delay and at the same time protect valid socioeconomic and environmental concerns of the community.

Willingness of the regulatory body to recognize the need for balance between conflicting desires is also apparent in Mexico's example at Cerro Prieto and the growth of that country's geothermal power sources.

It is also recognized that demonstration plants do provide Regulators the feedback of concrete field experience to permit them to fine-tune their regulations so they can be both protective and productive. It remains to be seen if the Agencies will wisely use the experiences for full community welfare.

Geothermal development continues to face unknown regulation exposures. In-

terested parties will need to follow regulatory development in these areas:

- Underground injection (presently on a two-year deferral)
- Waste disposal: Federal Resource Conservation and Recovery Act (RCRA) regulations and for states like California with more restrictive in-lieu programs.
- Water discharges: constantly increasing number of chemical and water quality limitations.
- Toxic Substances Control Act
- Comprehensive Environmental Response, Compensation and Liability Act of 1980 (Superfund)
- Air Quality regulations
- Noise

It is vital that demonstration or other field experiences receive dissemination and consideration by the Regulatory bodies if the ensuring regulations are to be useful and beneficial.