SEP 1 7 1993

Dr. Kevin D. Crowley U.S. Geodynamics Committee Board on Earth Sciences and Resources National Academy of Sciences 2001 Wisconsin Avenue NW-HA372 Washington, D.C. 20007

Dear Dr. Crowley:

SUBJECT: U.S. MAGNETIC ANOMALY DATA BASE QUESTIONNAIRE

I am responding to Dr. Brett's letter of August 6, 1993, requesting the Nuclear Regulatory Commission's review of the subject questionnaire. The review was conducted by staff from the Division of High-Level Waste Management, the Division of Low-Level Waste Management and Decommissioning, and the Division of Fuel Cycle Safety and Safeguards. Enclosed is the staff's response. It should be noted that the NRC's Office of Nuclear Material Safety and Safeguards (NMSS) is not necessarily advocating that the system be upgraded. However, the responses represent how NMSS would use an upgraded system if it were available.

If you have any questions concerning this subject, please contact Mr. Abou-Bakr Ibrahim of my staff. He can be reached at (301) 504-2523.

> Sincerely, Original signed by Malcolm R. Knapp Robert M. Bernero, Director Office of Nuclear Material Safety and Safeguards

Enclosure: As stated

	DISTRIBUTION NMSS 9300407										
CNWRA	NMSS R/F	HLPD R/F	LSS								
LPDR	ACNW	PDR .	CENTRAL FILE								
MFederline, HLHP	On-Site Reps	Off Dir r/f	MKnapp, PMDA								
DLoosley, PMPA KMcConnell, HLGE	CPoland, PMRM	BLynn, HLWM	Albrahim, HLGE								

* See previous concurrence

OFC	HLPD	E	HLPD*		HLGE*		HLPD*		HLWM*		HUN A	
NAME	Rt fryghiwd		RJohns	RJohnson RBallard		JHolonich		JLinehan		Bi ogrigbilood		
DATE	09/10/9	93	08/31/	/93	09/09	/93	09/08/	93	09/	/93	09//0/93	
OFC	NMS\$	2	NM	SS					08.2	`		
NAME	GAFTOT	to	RB,	ethe	mor		aliolas					
DATE	09/13/	93	09	1171	93							
C S:\GEOD	= COVER VYN.RDC		E = (COVE	R & ENCLO	DSURE	1	N = N	O COPY		407	

40

RESPONSE TO QUESTIONNAIRE

ĩ

1. The U.S. Nuclear Regulatory Commission is the responsible agency for determining whether to grant a license to U.S. Department of Energy (DOE) to construct and operate a high-level waste repository. DOE's site characterization program is the first step in examining the suitability of the site for waste disposal. The NRC staff will review the results of these characterization efforts when they are received. Improved high resolution magnetic data will enhance our review capabilities for regional studies of crustal structure and composition. They will also be useful for possible identification of natural resources. The NRC is interested in evaluating the DOE submittal and in confirming those features which may/may not adversely affect the performance of the repository. Available high resolution geophysical data will increase DOE, NRC and NRC contractor (Southwest Research Institute, Center for Nuclear Waste Repository Analyses) ability to accomplish these goals.

2. The year 2001 is the proposed date for DOE to submit its license application, therefore the availability of the upgraded data before this time frame will be very helpful.

3. Yes, there is a need for a more compatible data set. A consistent survey level and an upward or downward continuation should be implemented.

- 4. Yes. A substandard data set is defined as:
 - a. A resolution lower than the standard set by the USGS and the international community (for example 1 nT).
 - b. A data set which is identified as an outlier to common observations and cannot be integrated with other sets of data due to incorrect regional information.
 - c. A data set which has a severe datum shift which may contribute to artificial anomalies.

A program to acquire new data should address the shortcomings of substandard data collection mentioned above. For example, closing the flight line spacing, or a higher data resolution of at least 1 nT are two methods of acquiring more precise data.

5. Improving techniques for acquiring data with high accuracy and high spatial resolution. For example, improving the navigation system using GPS and careful selection of survey parameters.

6. A flight line intersection program should be implemented to eliminate diurnal variations.

ENCLOSURE

7. A coordinated effort by federal agencies, mining industries, and oil companies involved in collecting geopotential data.

8. Colored shaded relief and multi-directional shaded relief maps should be available in both digital and map forms.

9. Southwest Research Institute, Center for Nuclear Waste Regulatory Analyses, 6220 Culebra Road, San Antonio, TX, 78228-0510, phone ext. (210) 522-5160. The point of contact at this address is Dr. H. Lawrence McKague.

10. Mr. Abou-Bakr Ibrahim, phone ext. (301) 504-2523; Fax (301) 504-2264 (ATTN: Mr. Ibrahim, Mail Stop 4H3)

11. Other issues are:

3

- a. Data set collected should have a complete description of instrument calibration, processes used for data reduction, and a good quality control.
- b. Uniform data measurement procedure.