NO.

REPORT
ON
THE COOPERATIVE MINERAL EXPLORATION
IN
THE UMM AD DAMAR AREA
THE KINGDOM OF SAUDI ARABIA

PHASE II

MARCH 2000

JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

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PREFACE

In response to the request of the Government of the Kingdom of Saudi Arabia, the Japanese Government decided to conduct a Mineral Exploration Project consisting of analysis of existing data, geological survey, and geophysical survey and other relevant work in the Umm ad Damar area to clarify the potential of mineral resources, and entrusted the survey to Japan International Cooperation Agency (JICA). The JICA entrusted the survey to Metal Mining Agency of Japan (MMAJ), because contents of the survey belong to a very specialized field of mineral exploration.

The survey conducted during this fiscal year is the second-phase of a three-phase project to be completed in 2001. MMAJ sent a survey team headed by Mr. Yoshihiro KIKUCHI to the Kingdom of Saudi Arabia from August 28, 1999 to November 23, 1999, and January 22, 2000 to March 5, 2000. The field survey was completed on schedule with the cooperation of the Government of the Kingdom of Saudi Arabia.

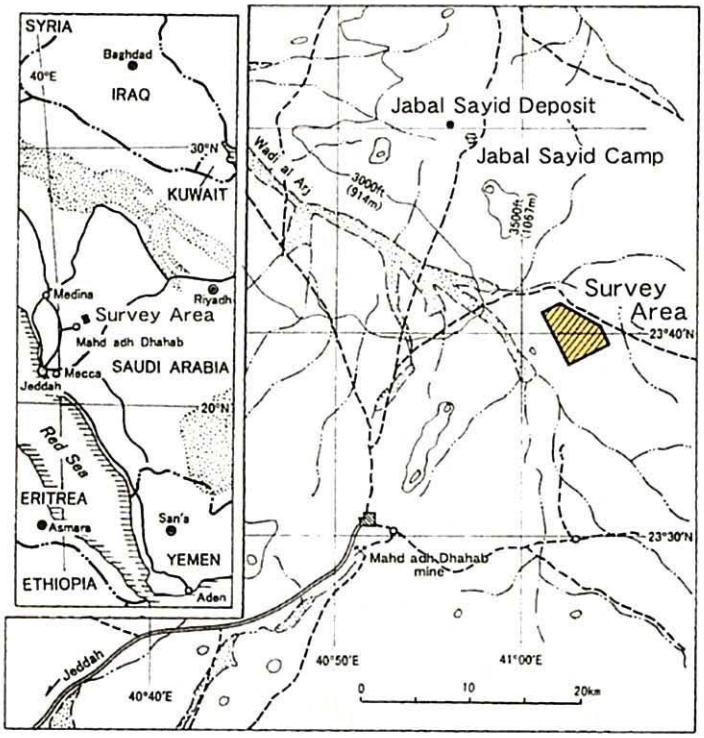
Results of the second-phase survey are summarized in this report which constitutes a part of the final report.

We wish to express our deep appreciation to the persons concerned of the Government of the Kingdom of Saudi Arabia, the Ministry of Foreign Affairs of Japan, the Ministry of International Trade and Industry, the Embassy of Japan in Saudi Arabia and the authorities concerned for the close cooperation extended to the team.

March, 2000

Kimio Fujita
President
Japan International Cooperation Agency

Naohiro Tashiro
President
Metal Mining Agency of Japan



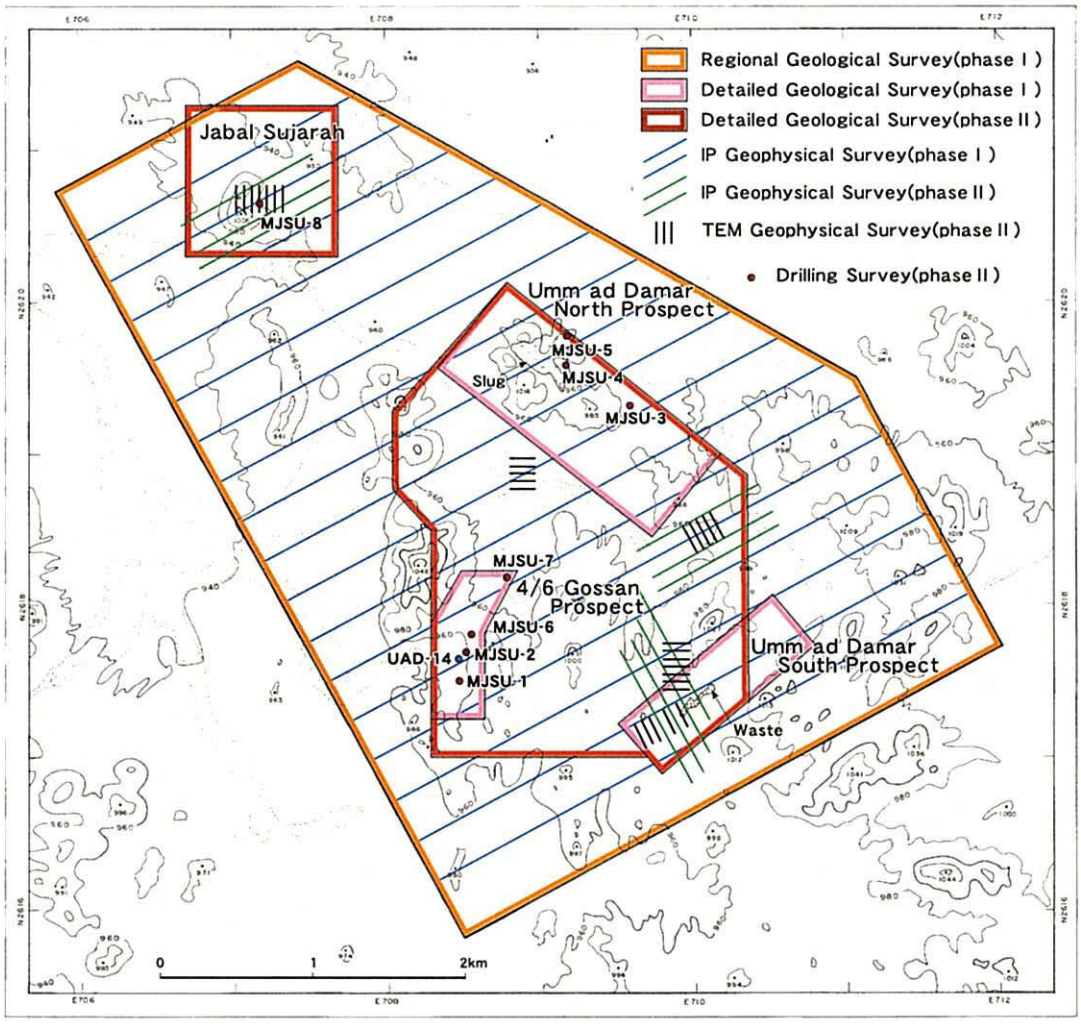


Fig. 1-1 Location Map of the Survey Area

SUMMARY

Drilling, detailed geological survey, IP and TEM geophysical survey were carried out in the Umm ad Damar area during the second year of the project. The results are summarized as follows.

① At total of eight holes with total length of 2,152m were drilled. The drilling sites were selected from the results of the first-phase detailed geological survey on known prospects and of IP reconnaissance with 300m traverse interval.

② Drilling clarified the existence of volcanogenic massive sulfide Cu-Zn mineralization at Jabal Sujarah, 4/6 Gossan Prospect, and a part of Umm ad Damar North Prospect, also Cu vein mineralization was found to occur at Umm ad Damar North Prospect.

③ Volcanogenic massive sulfide mineralization was confirmed at MJSU-2, MJSU-5, MJSU-6, and MJSU-8. In these holes, massive ore and breccia ore consisting of chalcopyrite-sphalerite-pyrite occur in host rock of rhyodacitic pyroclastic rocks. Shale and tuff are intercalated in the mineralized zones. Alteration of the host rock is silicification and chloritization. The main mineralized zones are as follows.

Drill Hole No.	Drilling Depth (m)	Interval (m)	Assay Results			
			Au (g/t)	Ag (g/t)	Cu (%)	Zn(%)
MJSU-2	121.15－125.40	4.25	0.37	23.0	0.96	2.17
	130.10－142.25	12.15	0.37	14.0	1.00	3.67
MJSU-5	268.90－275.40	6.50	<0.05	2.1	0.99	0.20
MJSU-6	134.75－138.00	3.25	<0.05	28.0	0.69	3.84
MJSU-8	73.25－73.55	0.30	<0.05	3.9	0.90	12.74
	82.65－83.35	0.70	0.24	19.5	1.57	0.01

④ Cu vein mineralization was confirmed at MJSU-3, MJSU-4, and MJSU-5 of Umm ad Damar North Prospect. The veins and network mineralization observed in these holes consist of chalcopyrite and pyrite. The host rocks are dacite and dacitic pyroclastic rocks. The veins and network contain little silicate and oxide minerals. Chloritization is notable near the veins. Gold and silver grade is low. The main mineralized zones are as follows.

Drill Hole No.	Drilling Depth (m)	Interval (m)	Assay Result			
			Au (g/t)	Ag (g/t)	Cu (%)	Zn (%)
MJSU-3	220.10—220.90	0.80	<0.05	6.6	2.48	0.03
MJSU-4	140.50—147.80	7.30	<0.05	9.1	1.98	0.03
	155.50—158.85	3.35	<0.05	6.3	2.19	0.07
MJSU-5	79.40—82.55	3.15	0.07	15.4	2.25	0.06
	88.90—93.20	4.30	<0.05	13.7	1.93	0.03
	95.50—99.90	4.40	0.06	12.5	3.70	0.02
	245.65—247.70	2.05	<0.05	2.0	1.02	0.02
	328.90—331.20	2.30	0.07	7.1	6.51	0.01

⑤ The cores (drilled in 1977) stored in Jabal Sayid camp were re-arranged. And UAD-3, UAD-4, UAD-6, and UAD-10 cores were examined. Chalcopyrite-pyrite-quartz veins were observed at 105.95—112.05m depth and pyrite-chalcopyrite-sphalerite dissemination at 112.05—115.00m depth of UAD-4 of Umm ad Damar South Prospect. The host rocks were chloritized rocks. The results of assay are as follows.

Drill Hole No.	Drilling Depth (m)	Interval (m)	Assay Result			
			Au (g/t)	Ag (g/t)	Cu (%)	Zn (%)
UAD-4	105.95—112.05	6.10	0.34	22.9	1.97	0.23
	112.05—115.00	2.95	1.14	39.2	3.72	3.07

Ore samples collected from ancient pits of this Prospect also showed 3.0—6.2g/t Au. It is seen that the mineralization of this Prospect has higher Au and Zn content than the Cu veins of the Umm ad Damar North Prospect.

⑥ IP geophysical survey was carried out in order to clarify the detailed chargeability distribution of the "B-12", "M-27", and "P-18" anomalous zones extracted by IP survey last year. The following was clarified as a result.

B-12 anomaly: The lateral extension of this anomalous zone is the largest in the survey area, and the chargeability is very high.

M-27 anomaly: This anomalous zone consists of northern and southern sub-zones. The northern strong anomaly sub-zone including station M-27 is oblong and extends in the NE-SW direction. The southern sub-zone occurs around station N-25 and is small.

P-18 anomaly: This anomalous zone extends northward and connects with station O-21.

⑦ Five sub-areas were selected for TEM geophysical survey. They are TB-12, TJ-18, TM-27, TO-21, and TP-18. Selection was based on IP survey and detailed geology. TEM survey resulted in extracting almost vertical conductive plates in these sub-areas.

⑧ The results of detailed geological survey, drilling, examination of existing cores, IP survey, and TEM survey were interpreted comprehensively. The conductive plates extracted in TM-27, TO-21, and TP-18 sub-areas are assessed to indicate vein-type mineralization and the plates in TB-12 and TJ-18 sub-areas volcanogenic massive sulfide mineralization.

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