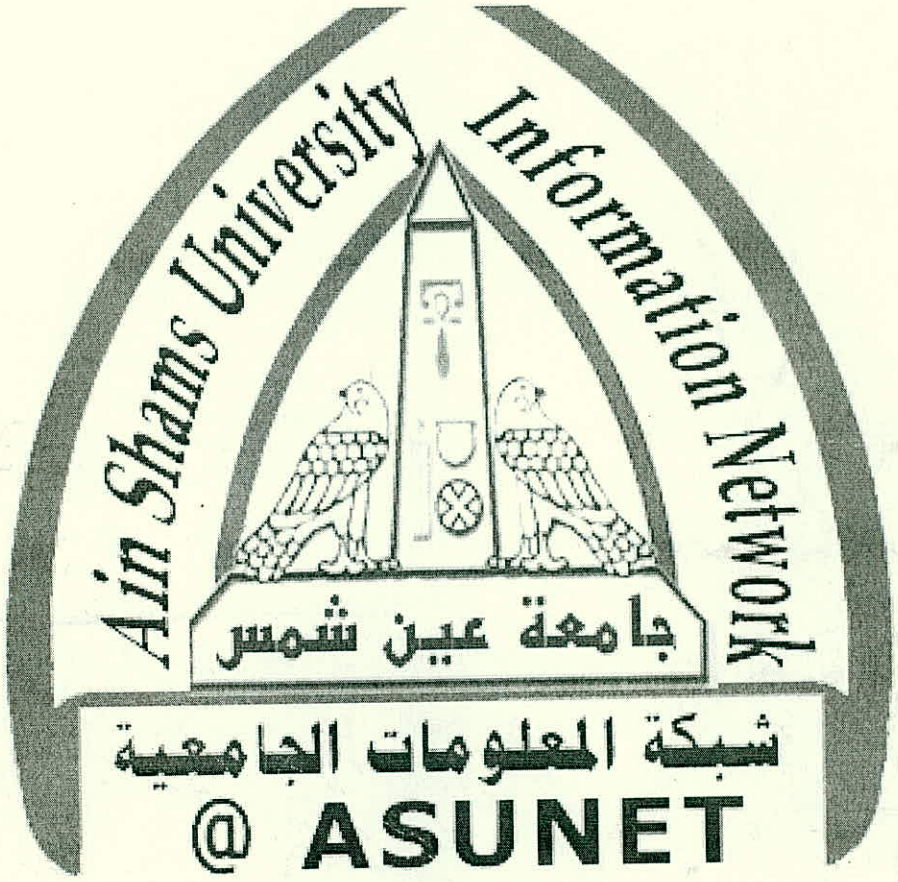
شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم



شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

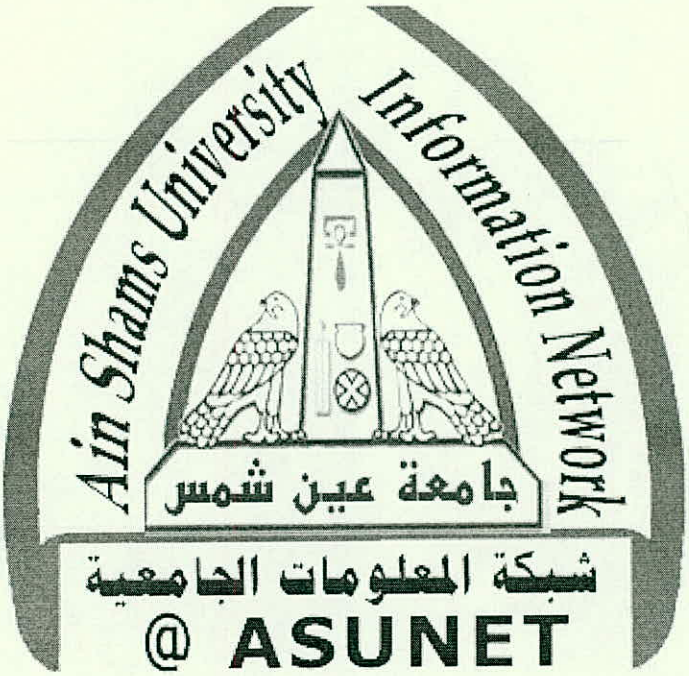
تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بالرسالة صفحات

لم ترد بالأصـــل



بعض الوثائق الأصلية تالفة

APPLICATIONS OF GEOINFORMATION SYSTEMS AND REMOTE SENSING IN THE STUDY OF GEOLOGY AND AIRBORNE RADIOMETRY OF JEBEL UMM GHAYJ-JEBEL HUMMER WAJJAT AREA, CENTRAL EASTERN DESERT, EGYPT

A THESIS SUMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF SCIENCE IN GEOLOGY

BY

GAMAL ABD EL-AZIZ ABD EL-FATTAH SHEDID

(B. Sc. in Geology, 1984)
&
(M. Sc. in Geology, 1997)
Assist. Lecturer / Nuclear Materials Authority, Cairo, Egypt.

SUPERVISORS

Prof. Dr. MAHMOUD SAMY M. YOUSIF
Prof. of Geology, Faculty of Science
Ain Shams University,
Cairo, Egypt

Prof. Dr. ABDEL ATY B. SALMAN
Prof. of Geology, Nuclear Materials Authority, Cairo,
Egypt.

Prof. Dr. KLAUS-PETER STANEK
Prof. of Geology, Technical University Bergakademie of Freiberg,
Germany

B

7--

DEPARTMENT OF GEOLOGY
FACULTY OF SCIENCE
AIN SHAMS UNIVERSITY
September, 2001

APPLICATIONS OF GEOINFORMATION SYSTEMS AND REMOTE SENSING IN THE STUDY OF GEOLOGY AND AIRBORNE RADIOMETRY OF JEBEL UMM GHAYJ-JEBEL HUMMER WAJJAT AREA, CENTRAL EASTERN DESERT, EGYPT

A THESIS SUMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF SCIENCE IN GEOLOGY

BY

GAMAL ABD EL-AZIZ ABD EL-FATTAH SHEDID

(B. Sc. in Geology, 1984)
&
(M. Sc. in Geology, 1997)
Assist. Lecturer / Nuclear Materials Authority, Cairo, Egypt.

SUPERVISORS

Prof. Dr. MAHMOUD SAMY M. YOUSIF
Prof. of Geology, Faculty of Science
Ain Shams University,
Cairo, Egypt

Prof. Dr. ABDEL ATY B. SALMAN
Prof. of Geology, Nuclear Materials Authority, Cairo,
Egypt.

Prof. Dr. KLAUS-PETER STANEK
Prof. of Geology, Technical University Bergakademie of Freiberg,
Germany

DEPARTMENT OF GEOLOGY
FACULTY OF SCIENCE
AIN SHAMS UNIVERSITY
September, 2001

ACKNOWLEDGEMENTS

This work has been carried out at Ain Shams University, Faculty of Science, Geology Department, the Technical University Bergakademie Freiberg, Institute of Geology, and Nuclear Materials Authority. The study was completed and sponsored, especially the Geographic Information System (GIS) application, by the German Academic Exchange Service (DAAD) as a short period scholarship which is fully appreciated and gratefully acknowledged.

My sincere appreciation is extended to Prof. Dr. Mahmoud Samy M.Yousif (Ain Shams University) for the supervision and unlimited support throughout the study. My sincere appreciation to Prof. Dr. Klaus-Peter Stanek (Technical University Bergakademie Freiberg) for the initiation, supervision, valuable discussions and unlimited support, during both the field work in Egypt and office work in Germany, throughout the study. My great gratitude goes to Prof. Dr. Abdel Ati B. Salman (Nuclear Materials Authority) for supervision, unlimited support and valuable discussions throughout the study.

I would like also to express my deep appreciation to Prof. Dr. Hamdy Saif El Nassr (Chairman of Nuclear Materials Authority), Prof. Dr. Ibrahim El Kattani (Vice Chairman of Nuclear Materials Authority) and Prof. Dr. Ahmed Farouk Kamel (Nuclear Materials Authority) for their constant support and encouragement to complete this study.

Finally, the support and sacrifice of my mother, wife and my entire family was greatly appreciated

ABSTRACT

Gamal Abd El-Aziz Abd El-Fattah Shedid. APPLICATIONS OF GEOINFORMATION SYSTEMS AND REMOTE SENSING IN THE STUDY OF GEOLOGY AND AIRBORNE RADIOMETRY OF JEBEL UMM GHAYJ-JEBEL HUMMER WAJJAT AREA, CENTRAL EASTERN DESERT, EGYPT.

The main purpose of this dissertation is to use the geoinformation systems (GIS), remote sensing and the integrated geological and geophysical data in a comprehensive interpretation to determine radiometric, spectral reflectance, and accurate spatial distribution characteristics of different rock units, as well as geologic units bearing radioactive ores.

The total studied area is 1763.75 Km^2 and the outcropping rocks cover an area of about 982.07 Km^2 represent about 55% of total area while the area of wadi deposits is 781.68 Km^2 represent about 45% of the total area of study.

The granitic rocks are isolated and discriminated at > 15 K%, > 40 ppm eTh, > 20 ppm eU, and > 50 M.R/h Tc isoline (iso) levels. Coarse-grained biotite granites and muscovite granites are isolated and discriminated at > 35 K%, > 80 ppm eTh, > 30 ppm eU, and > 80 M.R/h Tc isoline levels. There are only 3 areas record > 35 K% iso, J. Humr Wajjat, J. Al Unayji, and J. Umm Bakrah. There are only 2 areas record >200 ppm eTh iso, J. Humr Wajjat, J. Al Unayji. There are only 4 areas record > 100 ppm eU iso, J. Humr Wajjat and J. Al Unayji. There are only 4 areas record > 100 M.R/h Tc iso, J. Humr Wajjat, J. Al Unayji, J. Al Yatimah, and J. Umm Bakrah. The basic-ultrabasic, metasediment, and metavolcanic rocks are discriminated and isolated at < 15 K%, < 40 ppm eTh, < 30 ppm eU and < 40 M.R/h.

The TM images of different band ratios can prepared to be sensitive for the discrimination of basic-ultrabasic, granitic, metasediment and metavolcanic rocks as major units that can be divided into smaller units. They also yield accurate spatial distribution of geologic units that can be used in mapping and evaluation stages purposes.

The GIS processing of geological, geochemical, radiometric and remote sensing data are useful in mapping of different exposed rocks and determination of very important geologic rock units, which have high possibilities for hosting radioactive ores. The results of this study can be useful in nuclear ores exploration oriented plans in other areas.

CONTENTS