ACQUISITION OF DATA FOR AN IRON MINING FIRM USING REMOTE SENSING TECHNIQUES FOR ESTABLISHMENT OF AN INTEGRATED STEEL PLANT

Dr. Angel A. Navarro
NASA -NRC, PHILS.

Manila, Philippines

BIOGRAPHICAL SKETCH

This Biographical Note is being presented for the purpose of bringing out the author's background in Digital Photogrammetry and Remote Sensing. As an author of numerous technical papers both in the American Society of Photogrammetry and Remote Sensing Centers such as Eros Data Center and the Environmental Research Institute of Michigan(ERIM) and closely related to this event the author is affiliated to the NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA) at Washington,D.C. under (MLA) Remote Sensing Program - Management and has greatly contributed to the United Nations University in Tokyo,Japan in the development and management of natural resources, such as held by the (ERIM) and (NRMC) on 20-26 APRIL ,1978 Manila,Philippines the 12th International Symposium on Remote Sensing of Environment.

ABSTRACT

In the decades to come, Remote Sensing uses will be very important in locating various important geological structure in wider regional scales as used in this paper.

1.- Landsat-D rectification using additional bands;

The seven (7) channel Multispectral scanner

called the Thematic Mapper (TM):

1.1. Channel 1-0.45 - 0.52 μm

- visible Blue Green.

2.1. Channel 2-0.52 - 0.60 μm

- VISIBLE RED

e.i.

3.1. Band 5, the red band,0.6 to 0.7 micrometers, emphasizes cultural features, such as metro-

politan areas.

4.1. Channel 4 -0.76 - 0.90 μm
- INVISIBLE SOLAR INFRARED *

e. i.

Band 7, the second infrared(near-) band 0.8 to 1.1 micrometers provides the best penetration of atmospheric haze and also emphasizes vegetation, the boundary between land and water, and landforms.

5.1. Channel 5- 1.55 - 1.75 μm
INVISIBLE SOLAR INFRARED

6.1. (Channel 6) 2.08 - 2.35 μm

(SOLAR INFRARED)

7.1. Channel 7 - 10.4-12.5 μm

THERMAL INFRARED

2.- WE HAVE USED THE FOLLOWING COMPUTATIONS FOR THE KEY TO MAKE THERMAL ENERGY YIELD ESTIMATES:

$Eth = V\sigma (TC + \beta) J$ ** ---------- (1)

Where: Eth= Thermal Energy yield in ergs/sec (assuming) cooling to ambient temperatures,--- (2)

V= Volume of extrusive lavas in cm^3/sec,------ (3)

σ= mean density of extrusive lava in g/cm^3 ---------- (4)

T= maximum temperature (above ambient) of lava, in °C. ---------- (5)

C= specific heat of lava ---------- (6)

β= latent heat of lava, and ---------- (7)

J= equivalent work of heat (4.1855×10^7)---- (8)

* Originally published in Sioux Falls, South Dakota United States Department of the Interior Geological Survey, pp. 70-71

The areal pixel of the geological remote sensing work being done is located at the Pacific Ocean Basin (Philippine - Trench), South East Asian North of the Philippines.

INTRODUCTION

At the present decade, through precise and accurate measurements such as Digital Photogrammetry and Remote Sensing techniques can accomphlised, the Gabun-Paracale Mining Co., Inc. an Iron Mining Firm has more consistency in ores deposition using (Satellite Photograph as in Figure I) to bring about regional deposits for the establishment of an Integrated Steel Plant and quantification by mathematical geomorphological estimates of its raw materials like iron-ore, coal, and limestone in nearby regional raw materials are set up as in a Nodal Point(Central Part) as general estimates herein are made by Digital Photogrammetry and Remote Sensing.

GEOLOGICAL REMOTE SENSING SAMPLING

THROUGH MATRIX ALGEBRAIC EXPRESSIONS

Plant and Mines Site Surveying

We have used here definite position of Plant and Mines Site through Satellite Datas, Flight Datas, and Ground Work follow-ups in order to set-up definite different plant locations and raw materials locations of Mines Site.

Let X^4 y = Plant and Mines Site------- (1)

Y(Angle of Pitch)=Geomorphic Rocks---------- (2)

X^4(Ore Shoots)=Pod-Like viens of known mineral resources regional values.------- (3)

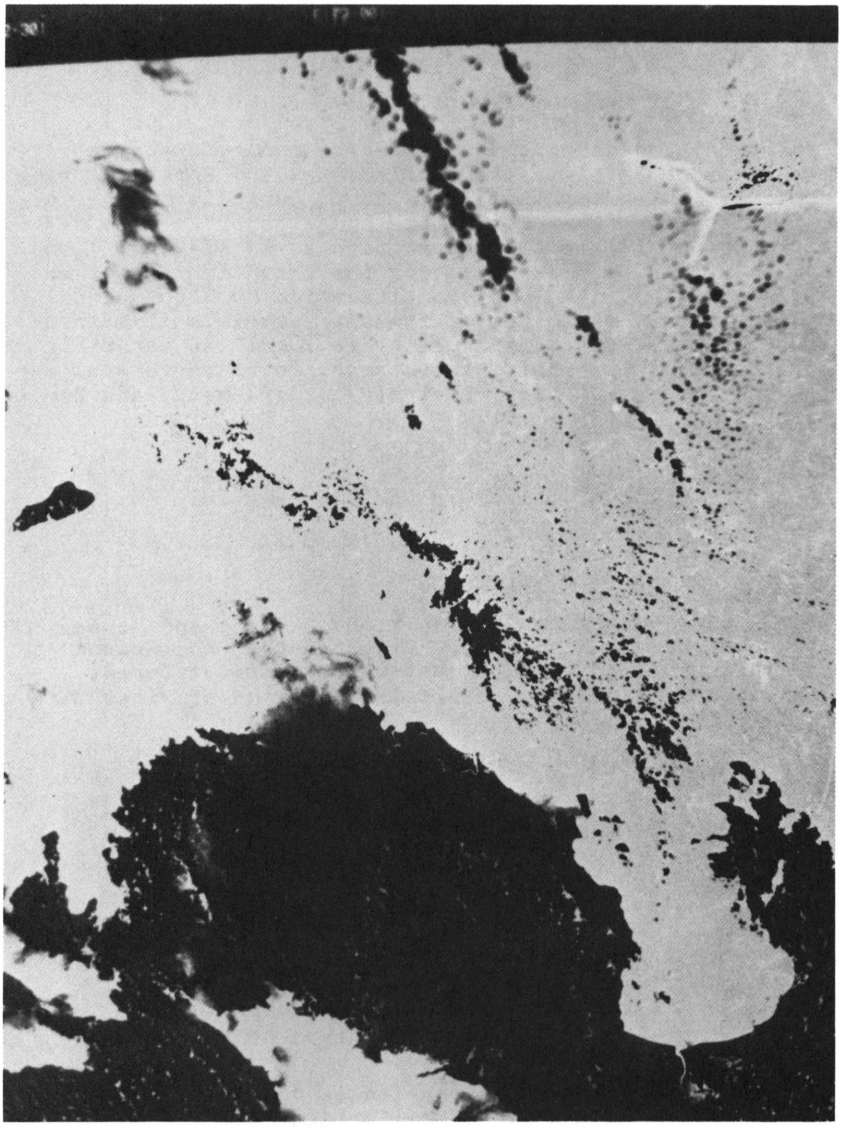
Y^3(Regional Ecology)= Geomorphological type of rocks--- (4)

X^6 $\tilde{N}$ = Vien-Like lenses of structural origin---------- (5)

LET X^4 Y = X^6 $\tilde{N}y$ + X^4 y^3---------- (6)

** Original publication in Falls Church, VIRGINIA by the AMERICAN SOCIETY OF PHOTOGRAMMETRY,pps. 1208-1209

SATELLITE PHOTOGRAPH NO.1



F I G U R E - 1

TO BRING ABOUT REGIONAL DEPOSITS FOR THE ESTABLISHMENT OF AN INTEGRATED STEEL PLANT.

DIGITAL PHOTOGRAMMETRY AND REMOTE
SENSING DATA AS USED IN AQUISITION
FOR INTEGRATED PLANT SET-UP

Morever, pertinent information for user data is made by a formal acquisition and using a Nodal Point(See Satellite Photograph as in Figure 2) this is important in Digital Photogrammetry and Remote Sensing especially in setting up an Integrated Plant in -Situ. In nodality an ecological balance of raw materials can be attained by the user.

Digital Photogrammetry and Remote Sensing

Data for Plant and Mines Site

In the earlier decades of resource managers, cartographic analysis, photogeologist, photointerpreters a wider mosaic scaling has been established by satellite photographs, aerial photographs and groundwork follow-ups. More than ever before this important aspects should be followed in acquisition of data through Digital Photogrammetry and Remote Sensing:

1.1. The Approach

2.2. The Management of Resources

3.3. The Technical Side

Regional Ecology

And in a more logical manner of presenting to the would be user is the regional ecology of the raw materials is highly considered in the turn of this century as explained in (DIAGRAM A) :

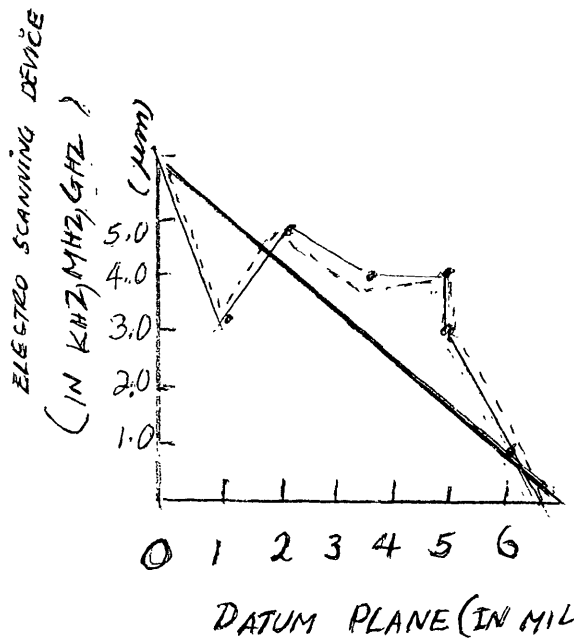
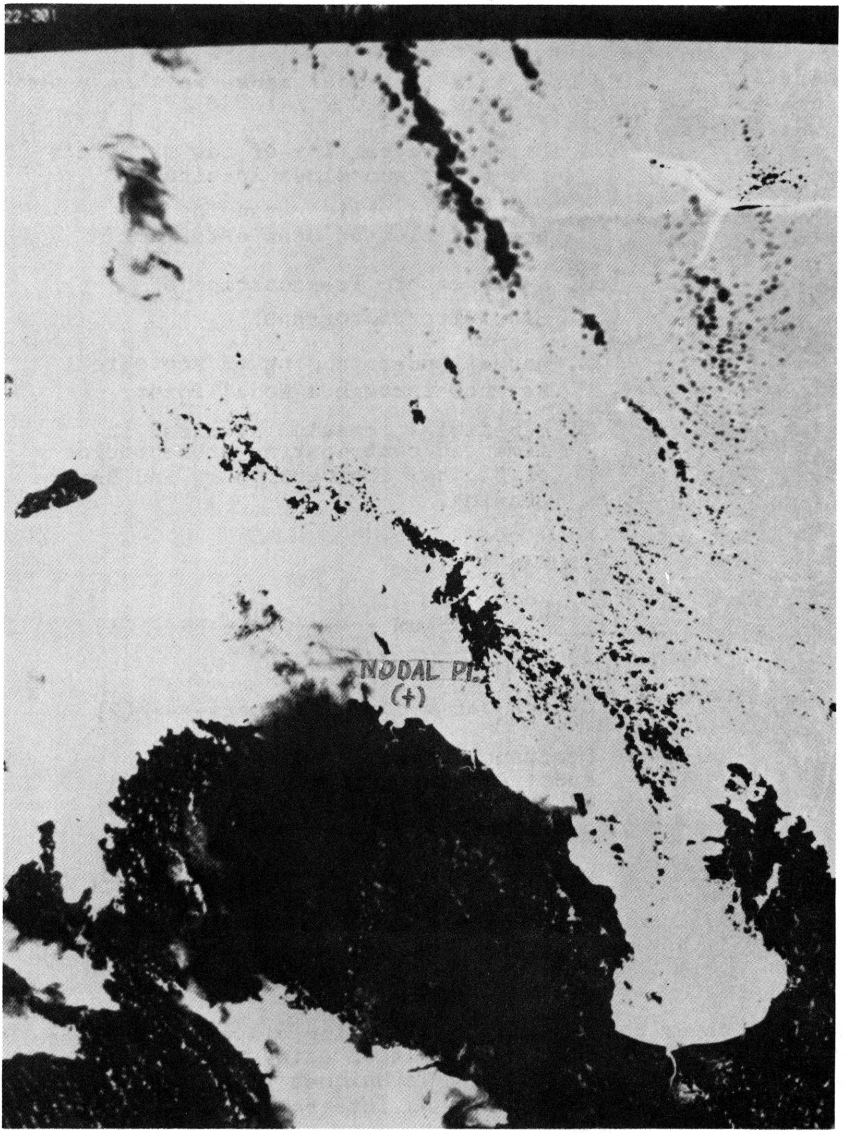


Diagram A
(Dr. NAVARRO, A.A.)

Effect of usage of geological remote sensing in ORES solar reflectance in percentage angle.

SATELLITE PHOTOGRAPH NO.2



F I G U R E - 2

DIGITAL PHOTOGRAMMETRY AND REMOTE SENSING DATA
THROUGH THE USE OF A NODAL POINT.(+)

RELEVANT USES OF DIGITAL PHOTOGRAMMETRY AND REMOTE SENSING IN THIS IMPORTANT DECADE FOR GENERAL NODALITY

Generally, as being used in a technical sense in this paper is the following for the AUTO -CARTO V / ISPRS IV :
(See Diagram B)

1.1. Linear Programming of raw materials for plant and mines in-situ.

2.2. Matrix Algebraic reasoning of presentation of user data.

3.3. Cartographic Presentation of Satellite Photograph.

4.4. Actual understanding of ecological balance through a Nodal Point.

5.5. Beneficial results acquired in time and contributing presentation of Digital Photogrammetry and Remote Sensing.

DIAGRAM B

$$\lambda = \frac{3 \times 10^{8}}{10^{15}} = 3\ \mu m \text{ ---------- (1)}$$

3×10^{8} = Cycles per second in meters-----(2)

10^{15} = Frequency Level and (visible portion) of EMR (ELECTROMAGNETIC RADIATION) or commonly known as POLARIZATION of EMR---------- (3)

λ = WAVELENGTH ---------- (4)

CONCLUSION

In this paper the NODAL POINT is being viewed as a source of information for Data Acquisition using Digital Photogrammetry and Remote Sensing Techniques for an Iron Mining Firm in the establishment of an Integrated Steel Plant.

A NOTE OF APPRECIATION

My heartfelt thanks to the Remote Sensing Community and to the International Photogrammetrists who in one way or another have made special efforts in making it possible for me in presenting this paper and have share their undying faith in contributing their time and effort to the author.

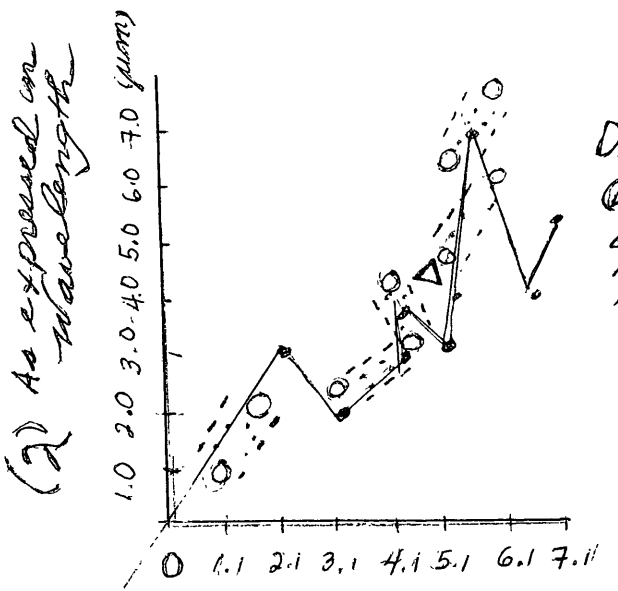


Diagram B

(Dr. NAVARRO, A.A.)

ECOLOGICAL BALANCE IN NODALITY (Δ) OF MINING DEPOSITS IS ATTAINED IN TIMELY RESULTS AND EXPENDITURES.

REFERENCES

BOWDEN, L.W. (1975) and PRUITT, E.L. (1975);
" MANUAL OF REMOTE SENSING," INTERPRETATION AND APPLICATIONS VOL.II, Pages 1208-1209: FALLS CHURCH,VIRGINIA - AMERICAN SOCIETY OF PHOTOGRAMMETRY.

TARANIK, J.V. (1978)
" CHARACTERISTICS OF THE LANDSAT MULTISPECTRAL SYSTEM " OPEN-FILE REPORT 78-187, Pages 70-71 SIOUX FALLS, SOUTH DAKOTA @ UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY.

ATKINS, A.H. (1978)
" THE EROS DATA CENTER." PAGES 8-9: Sioux Falls, SOUTH DAKOTA-U.S. DEPARTMENT OF THE INTERIOR/ GEOLOGICAL SURVEY.