

A-A'Section
( $\mathrm{N} 73^{\circ} \mathrm{E}$ )

cooperative mineral exploration
the chillwa $\stackrel{\text { al }}{\text { alkaline area }}$
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LOCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES SAMPLES AND ROCK SA
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A-A' Section
(N730 E)


LOCATION MAPE OF GEOCHEMICA SAMPLES AND ROCK SAMPLES

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- GeOCHEMICAL SAMPLES

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the chulwa alkaline area
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OCATION MAP OF GEOCHEMICAL SAMPLES AND ROCK SAMPLES

japan international cooperation agency
Metal ming agency of japan
fegruafy 1987


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| N-m | Orift |
| :---: | :---: |
| \% |  |
| VIIIIX, | Ankeritic sovite |
| , wares | Sovile |
| Vvvo | Carbomote-Slilicote fock |
| 1, 1 | Feldspaticic breccic, agglomerote |
| [ $\square^{\square} \Delta^{\Delta}$ | Phonolitic brecia |
| $\because \because \cdot$ | Fenitized gneiss |
|  | Trachyle |
| ${ }^{1+11^{1}}$ | Phonolite |
| 为 | Nepielicinite |
| 区x $x^{x}$ x | Syenite (Putaskite) |
| $x^{-x} x^{x}$ | Nepheine syenite (Foycie) |
| E-20 | Horntiende biotile-gneiss |
| Fix.e. | Granultee ond gneissose granile |
|  | Dolomitic martle |
|  | Doierite |
| $\Psi_{++++}^{++}$ | Gronite |
| Q117 | Perriosite |
| vvvv | Biotite-metoproxenite, melagobbro a bioifite |
| [\%\%-] | Meto conglomercte |
|  | Green pyroxene skorn |
| $\square$ |  |
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|  |  |
|  | S- Sivissergite |
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LOCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES
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metal mining agencr. of japai
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$\square$ Sor Sovite
$\nabla v^{v} v V^{V}$ Cabonote- Silicate rock
1,4 Felssponic beeccia, aggionerate
0 Phondicic brecia
$\ldots{ }^{T} \mathrm{~T}^{\top} \mathrm{T}^{\top}$ trachyle
[1, IT Phonolite
$\frac{x}{x} \frac{y}{x}-\bar{y}$ Nepheininte

Horniende biotite-gneiss
Hzritind Dolomitic marbile

yIITY Perinosite
$v^{v} v V$ Biotite-metopyroxenite, melogabbor \& bolifitie
$\because \circ \cdot 0$ Meta conglomerale
Dres ond plugs $T-$ Troch



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—. Dip of foioiotion of gneiss
[6Yooi] GEOChemical samples
6Yoois rock samples



LOCATION MAP OF GEOCHEMICAL SAMPLES AND ROCK SAMPLES


JAPAN INTERNATIONAL COOPERATION AGENCY
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${ }^{\text {FEbruaary }} \quad 1987$


- GYooit geochemical samples
- GYooir rock samples

cooperative mineral exploration

OCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES

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metal mining agency of japan
february 1987
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LOCATION MAP OF GEOCHEMICAL
in Chikala (13)


Japan internmional cooperation agencr februaby $\quad 1987$
$A-A^{\prime}$ Section


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. [6Yooir] ROCK samples


cooperative mineral exploration


OCATION MAP OF GEOCHEMICAL SAMPLES AND ROCK SAMPLES

IN Chaumbwi（15）


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| （IIIIIT | Ankeritic sivi |
| Wora | Sovile |
| $\nabla^{*} v^{*}$ | Carbonote－Silicote ron |
| ［1．${ }^{\text {a }}$ | Feldssonicic brecio，aggiomeate |
|  | Phonoitict brecio |
| $\cdots$ | Fenitized gneiss |
| \％${ }_{5}^{4}$ | Trachyle |
| 119 | Phonolite |
| ［ $8 \times$ | Nephelinitie |
| 区x $x^{x} x^{x}$ | Syente（Pulaskite） |
| 区x $x^{x} x^{x}$ | Nepheiline syente（foysite） |
| $\cdots$ | Homibiende biotite－gneiss |
| ［－M， | Gronuite and gneissose gronite |
| Fryritrix | Dolomitic motble |
|  | Doierite |
| ${ }^{+{ }^{+}+{ }^{+}+}$ | Gronite |
| A117． | Pertosite |
| Vvvo | Biortie－metopyroenite，metrgabbro a biotifite |
| $\bigcirc \circ$ | Nelo conglomeate |
|  | Green pyroxene skorn |
| $\square$ |  |
|  | P－Phonocic |
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|  | $\begin{aligned} & \text { AF - Microtoyalte } \\ & \text { S-Sölvsbergite } \end{aligned}$ |



OCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES
IN Chaumbwi（15）


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| （TIMIM | Anteritic sovite |
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| Vvovis | Carbonote－Silicate reck |
| ［1，${ }^{4}$ |  |
|  | Phonositic |
| $\because \because \because \cdot$ | Fenitized gn |
| \％rT］ | Tochyle |
| ［19 ${ }^{1}{ }^{1}$ | Phonotile |
| ［ $\times \mathrm{y} \times \mathrm{y}$ | Nepreilinte |
| ［ $x^{-x^{x} x^{x}}$ | Syenite（Puloskir |
| ［ $x^{x} \times{ }^{\text {x }}$ ］ | Nepheine syenite（foryit |
| \％－20 | Hornberde biofite－gneiss． |
| 50， | Grorulite and gne |
| 5ichor | Dolomitic mort |
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| ＋＋＋＋ | Gronis |
| （11） | Perthosite |
| －vvvi | Biorite－metopyroxenite，metog |
| $\because 0 \cdot 9$ | meta congiomerote． |
|  | Gieen pyrox |
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|  | Dip of foiation of gneiss |
| $\sqrt{69001}$ | geochemical sample |
| ［6rooir］ | rock samples |


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$v^{v} v^{v}{ }^{2}$ Corboncle- Silicate rack

$\stackrel{\Delta \Delta \Delta \Delta \Delta}{\Delta}$
TTTTTrachye
$L^{1} L^{1}{ }^{2}$ Phonol



$\square \sim=$| Hepheme syenite (Fyyyite) |
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$\frac{8178}{0 v^{v} v}$


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> | 1- IJoitite |
| :--- |
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LOCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES
SAMPLES AND ROCK SAMPLES
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 SAMPLES AND ROCK SAMPLES

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GEOOCHEMICAL SAMPLES
6roold Rock samples

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| :---: | :---: |
|  | motite |
| [7IIIT | Ankeritic sbvile |
| Ware | Sovie |
|  | Corbonaie-Silicote rock |
| 5, 1. ${ }^{\text {a }}$ | Feldsjomic breccio, ogglomeate |
|  | Phonollicic brecal |
| $\because \because \cdot \square$ | Feritized gnelss |
| Pr ${ }^{\text {r }}{ }^{\text {r }}$ | Trochyte |
| ${ }^{21-1}$ | Phonoite |
| \% 8 | Nephelinite |
|  | Syenite (Puloskite) |
| 区-xx*x | Nepheline syente (feyovire) |
| -2-2 | Horribende bioitie-gneiss |
| [-VM込 | Gronulite ond gneissose granite |
|  | Dolominicic marble |
|  | Doterite |
| ${ }_{+}^{+++\square}$ | Gronite |
| E117] | Pertiosite |
| -vovor | Biorite-metopyroxenite, meltagabro a b biolifite |
|  | Meta conglomerote |
| - $0 \cdot 0 \cdot 0$ | Green pyroxene skar |
| $\square$ | Dyxes ond plugs T -Trechyle |
|  |  |
|  | $\begin{gathered} \mathrm{N} \text {-Nephelinite } \\ \text { MF-Microfoyaite } \end{gathered}$ |
|  | S-Stivssergite |
|  |  |
|  | ${ }_{M}$-Monchiquit |
|  | A-Apile |
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| F6rool | geochemeal samples |
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$A-A^{\prime}$ Section
(N25 ${ }^{\circ} \mathrm{E}$ )

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LOCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES
IN Nsala (19)


JAPAN INTERNATIONAL COOPERATION AGENCY
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LOCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES

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Japan internationnl cooperation agency
MINING AGENCY OF
FEBRUARY 1987


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- GYooil gecchemical samples

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SAMPLES AND ROCK SAMPLES

${ }_{\text {february }} 1987$


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LOCATION MAP OF GEOCHEMICAL SAMPLEE AND ROCK SAMPLES


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$A-A^{\prime}$ Section
$(W-E)$



LOCATION MAP OF GEOCHEMICAL AAMPLES AND ROCK SAMPLES

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metal mining agency or japan
february 1987


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$\because \because \because$ Fenilized gneiss
TTIV Trachyle


$\left.\frac{x^{2} x^{x} x}{}{ }^{x} \right\rvert\,$ syenite (Puloskite)

Hornberde biotite-gneiss
Fmirrititi Doiomitic morbie

$\frac{1}{+++,++}$ Granite
5113 Pertios

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$\square$ oykes and plugs $\mathrm{T}-\mathrm{T}$ Ta


Republic of malawi

LOCATION MAP OF GEOCHEMICAL SAMPLES. AND ROCK SAMPLES


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$A-A$ Section
(W-E)


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ayoil cecchemical samples

- RGYools Rock samples

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$(W-E)$



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$A-A^{\prime}$ Section
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LOCATION MAP OF GFOCHEMCA
SAMPLES AND ROCK SAMPLES


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A-A' Section
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LOCATION MAP OF GEOCHEMICAL
SAMPLES AND ROCK SAMPLES

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A-A' Section


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    TTTTHC
    $\frac{x^{1}+1}{P}$ Phonotite
    
    
    
    Hornblende lioitie-gneiss
    
    
    ${ }^{+}+t^{++7}$ Granite
    $\square v^{v} v v^{0}$ Biotite- meiopyroxe
    
    
    $\longrightarrow$ Dykes ond plugs $\begin{gathered}\mathrm{T}-\text { Trechyle } \\ \mathrm{p}-\mathrm{P} \text { heonlut }\end{gathered}$
    

