

Preliminary investigation on Corundum Mineralization in Yatkansin Taung area

&

Proposed Workplan for 2018:

Under a collaborative study project between



*Department of Geological Survey and
Mineral Exploration (DGSE)*

*Department of Mineral Resources
(DMR)*



Outline:

- **Background:**
- **2017 working progress**
- **2018 working plan**



Background:

➤ **2017 situation:**

- ❖ DGSE-DMR co-research team (led by U Mg Mg Naing and U Han Linn Moe) just finished preliminary investigation in Yatkansin Taung Area.
- ❖ In addition, according to the CLMTV working group meeting in Chiang Rai, Thailand in February, this co-research project was proposed to expand the collaborative scale from bi-lateral (between DGSE & DMR) to Multi-lateral (among DGSE, DMR & GDMR of Cambodia), under the title of “**Comparative Study on Mineralization of Gemstone in CLMTV Region.**” (under the process of requesting financial support from TIGA)



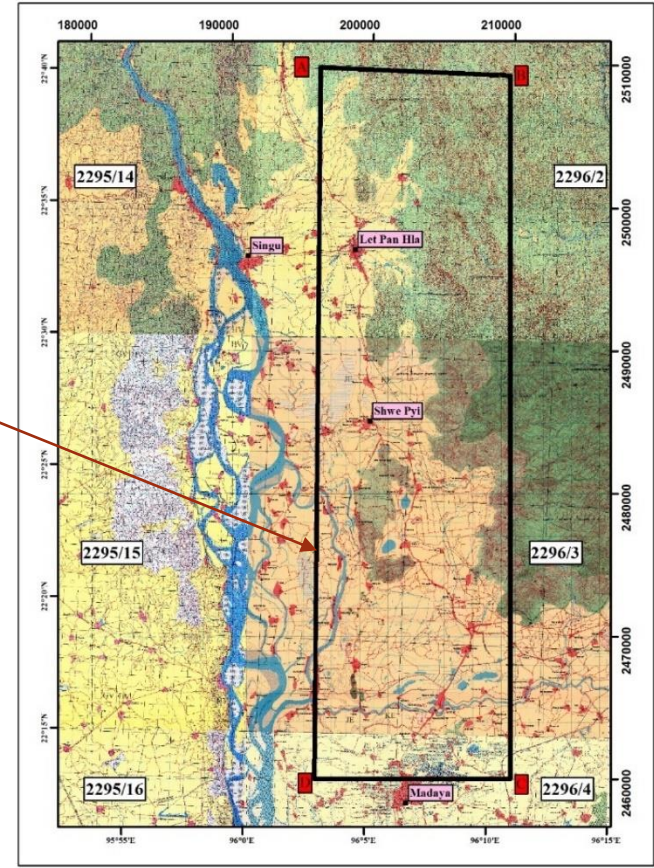
2017 Working progress:

2017 Study area:

**Myanmar.....Mogok metamorphic belt
(Yatkansin Taung)**



DGSE - DMR Project Proposal Area
Under the Myanmar - Thailand Technical Cooperation
on "The Comparative Studies on Mineral Resource Potential"
UTM Map Ref - 2295/14,15,16 & 2296/2,3,4



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DMR Project Proposal Area(676.6779 Sqkm)

| No | Eastern | Northern | UTM Map_Ref |
|----|---------|----------|----------------|
| A | 196239 | 2509886 | UTM 2296/2,3,4 |
| B | 209670 | 2509313 | UTM 2296/2,3,4 |
| C | 209654 | 2460035 | UTM 2296/2,3,4 |
| D | 195783 | 2460036 | UTM 2296/2,3,4 |

| Point | Latitude | Longitude |
|-------|---------------|---------------|
| A | 22°40'14.597" | 96°2'36.89" |
| B | 22°40'4.491" | 96°10'27.434" |
| C | 22°13'23.642" | 96°10'59.289" |
| D | 22°13'15.076" | 96°2'55.307" |



Rock strata in Yatkansin Taung Area

Older rocks:

- **Marble:** various lithology
- **Calc-silicate**
- **Grt gneiss/amphibolite**

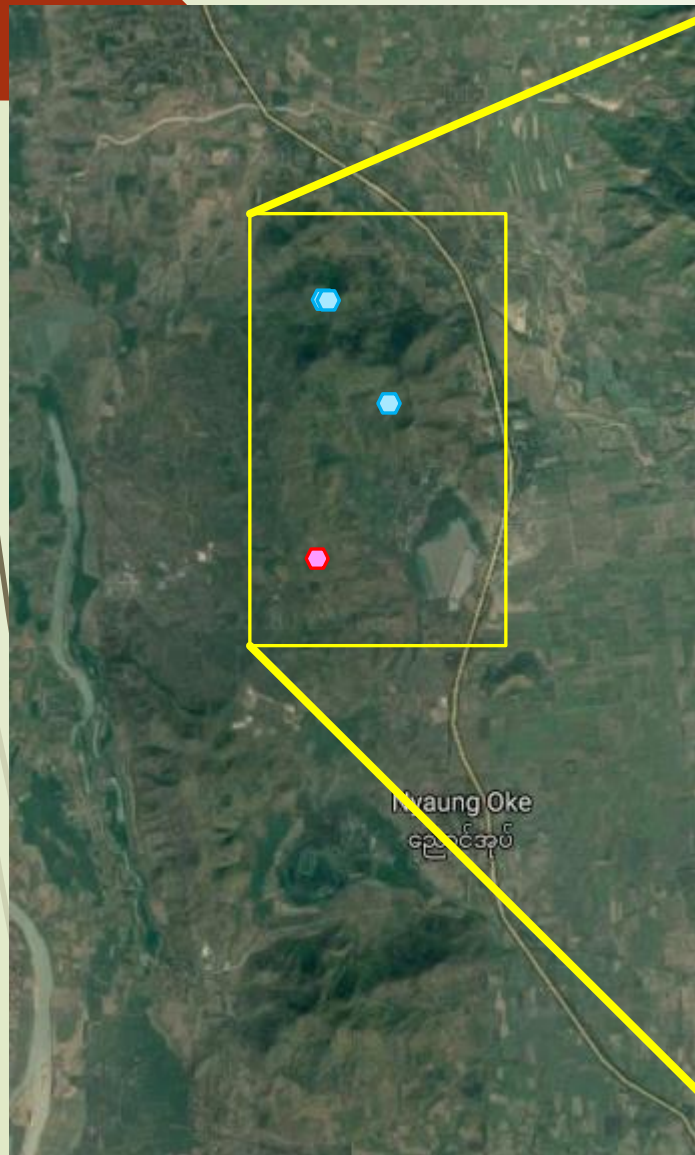


Younger rocks:

- **Quartzo feldspartic rocks:**
at least 2 generations
- **Bt granite**



Corundum sites in Yatkansin Taung Area



Corundum sites in Yatkansin Taung Area

Shwe Myin Din Taung



Nagamauk Taung



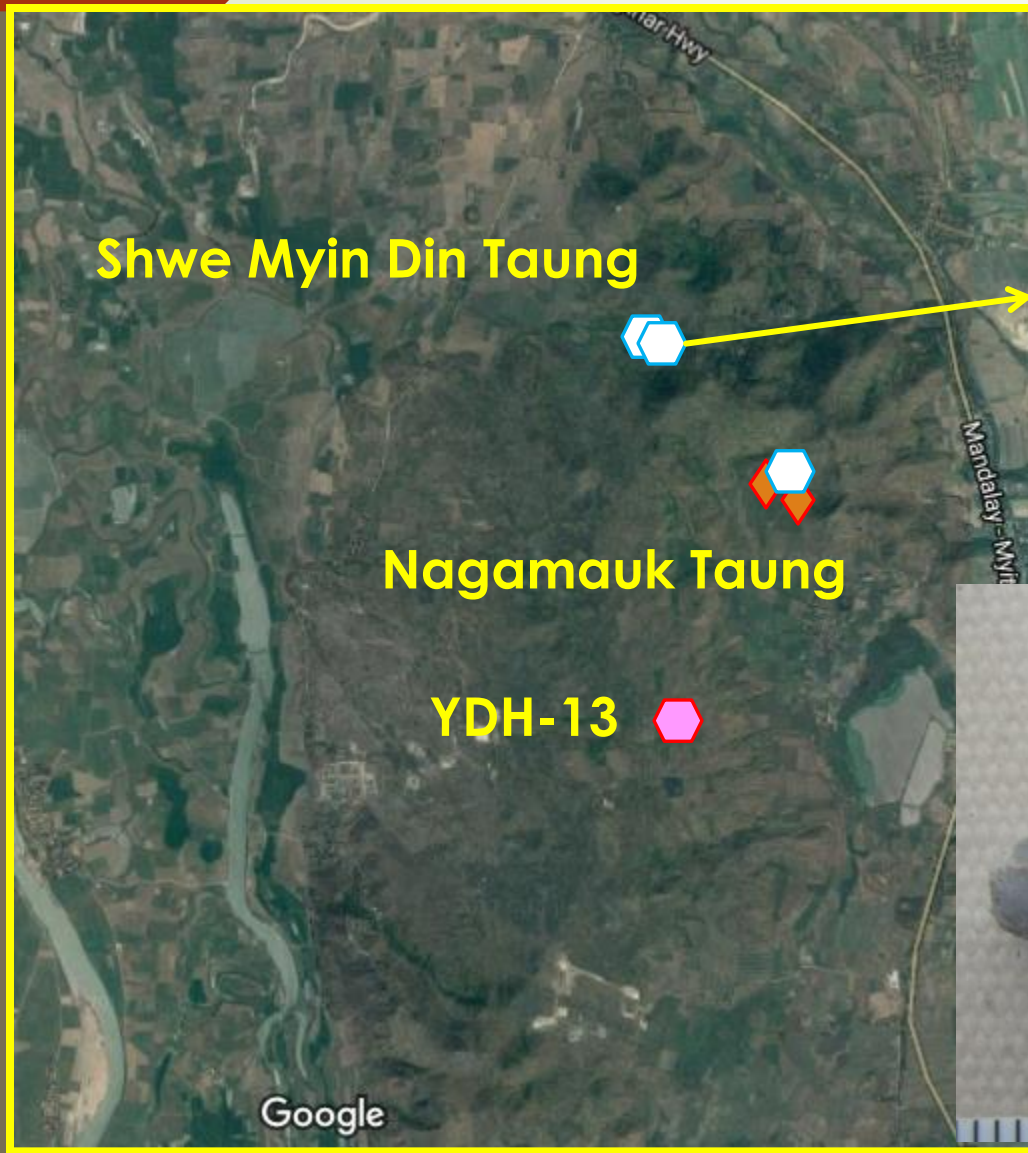
YDH-13



Google



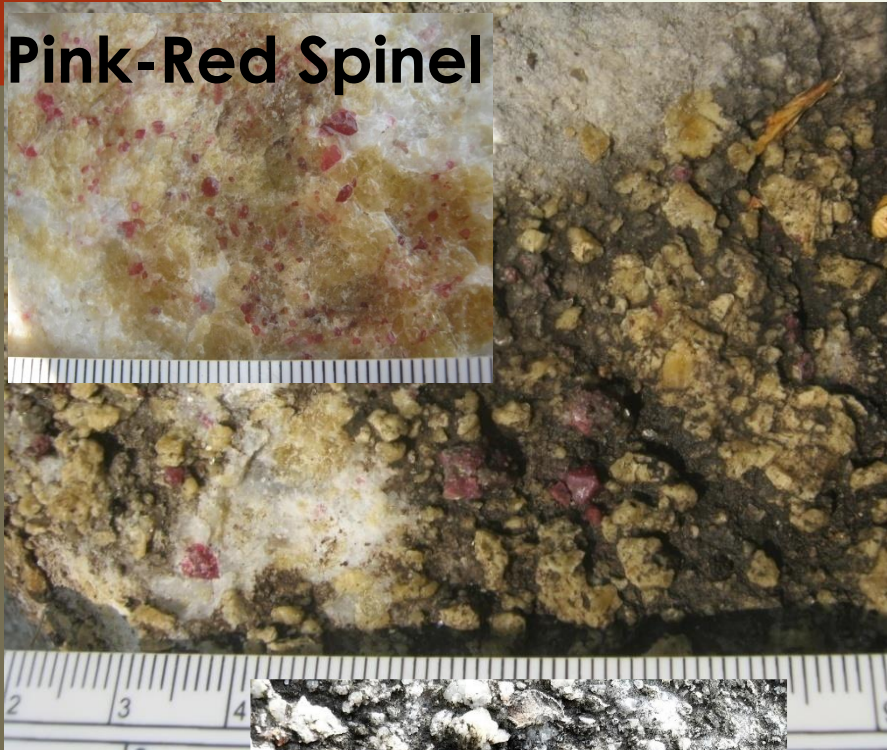
Corundum sites



Google

Spinel varieties

Pink-Red Spinel



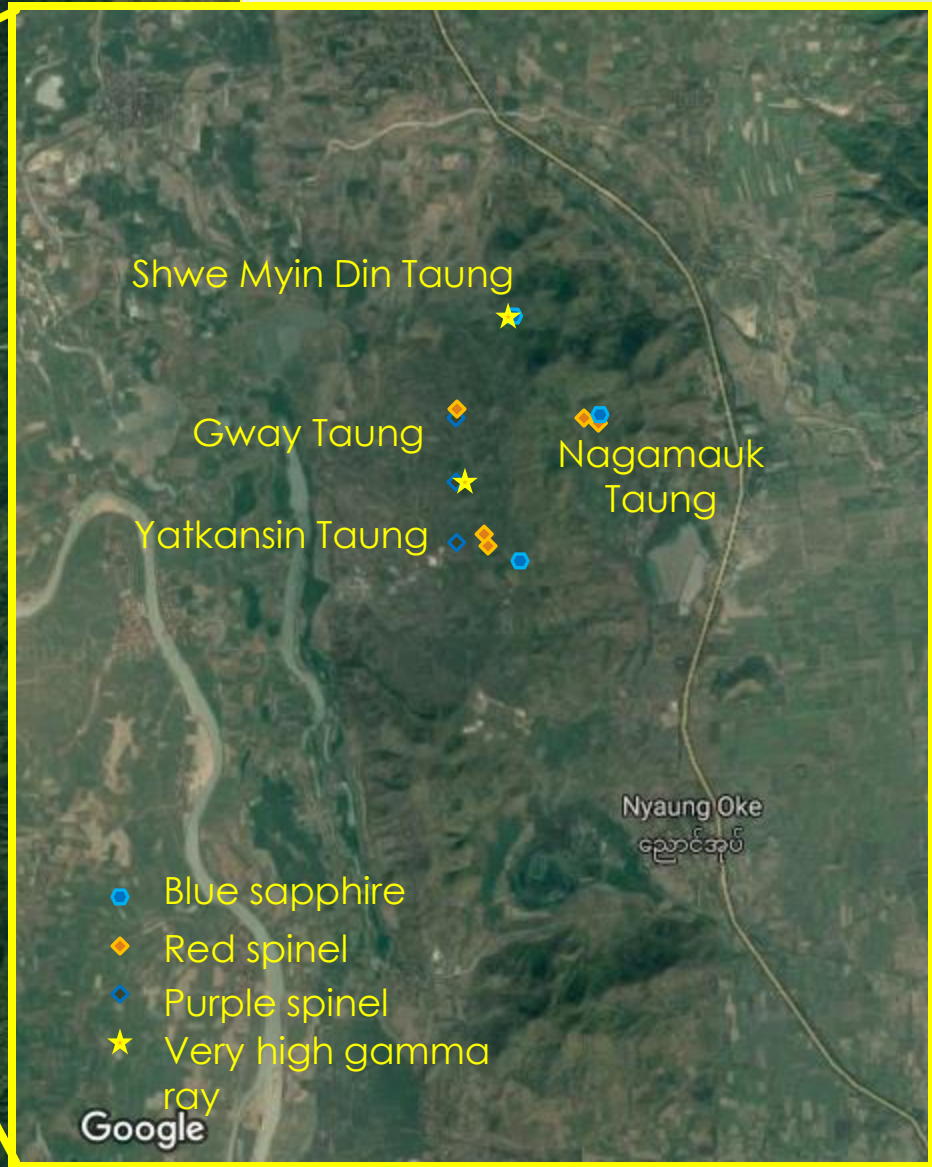
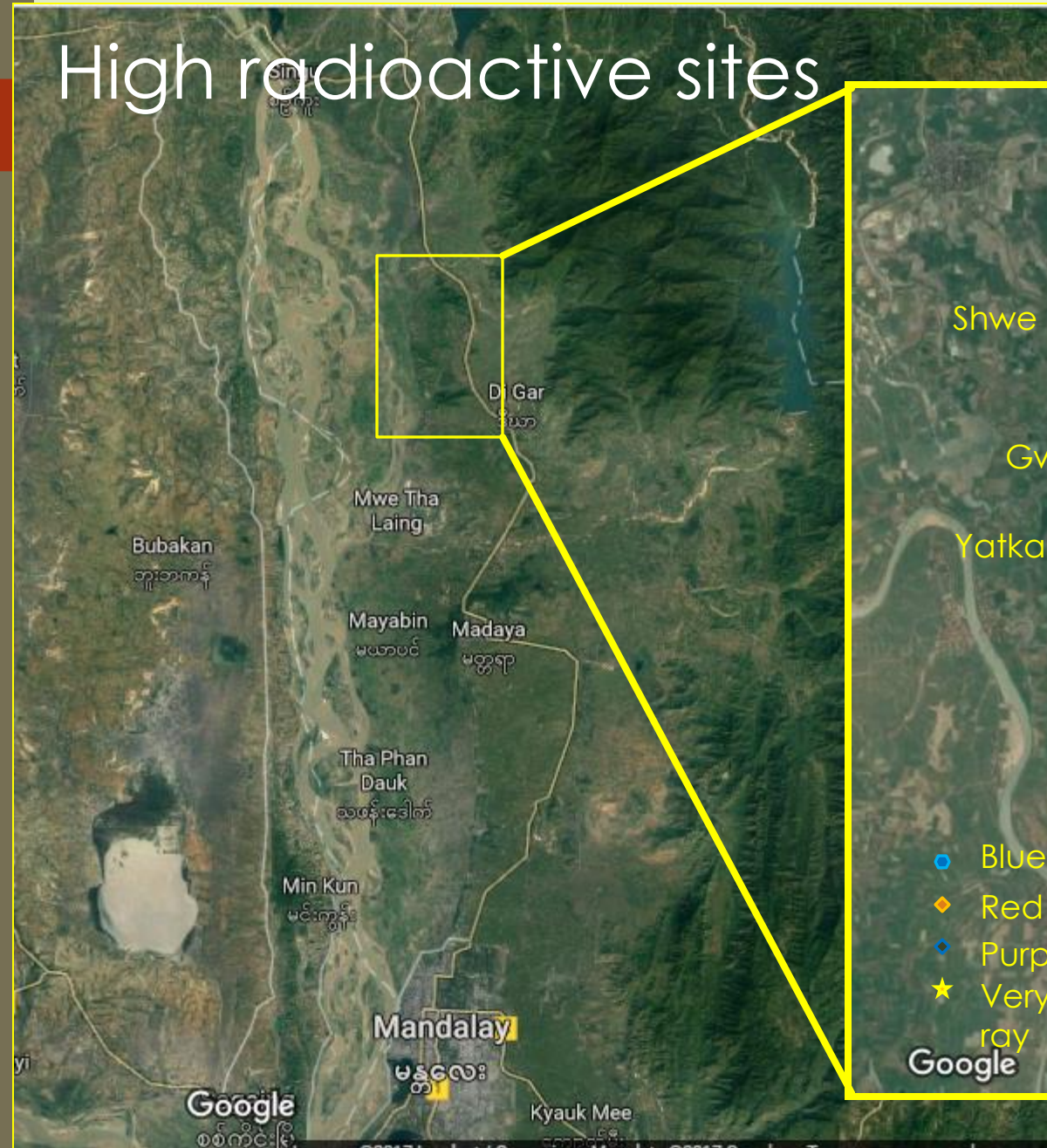
Orangish Spinel



Purple Spinel



High radioactive sites



- Blue sapphire
- ◆ Red spinel
- ◆ Purple spinel
- ★ Very high gamma ray

Yatkansin Taung Area

High radioactive sites

(Shwe Myin Din Taung area)

► Quartzo feldspatic lens



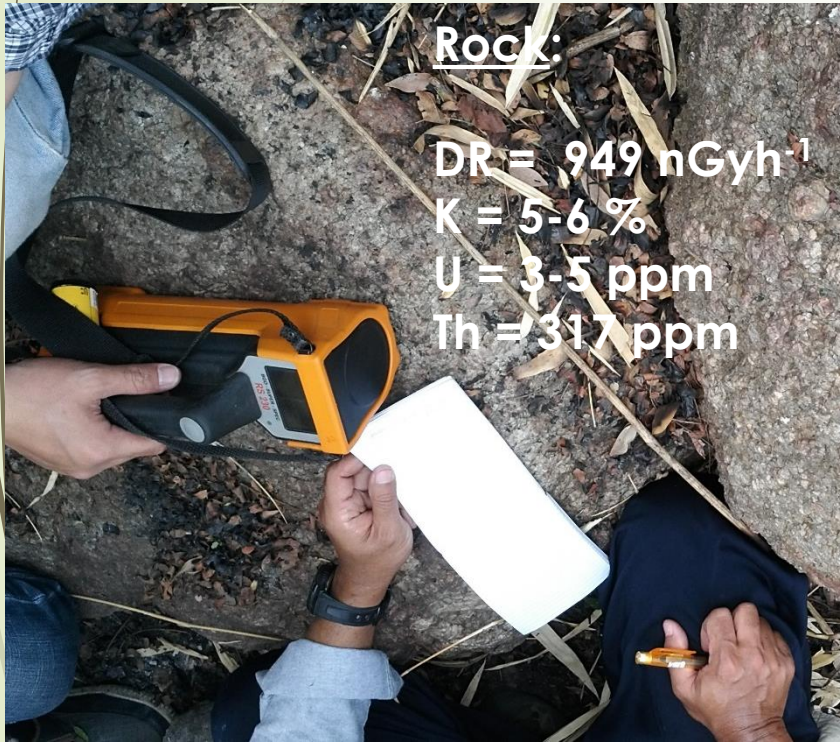
DR = $3.0 \mu\text{Gyh}^{-1}$
K = 4.9 %
U = 38 ppm
Th = 1,017 ppm



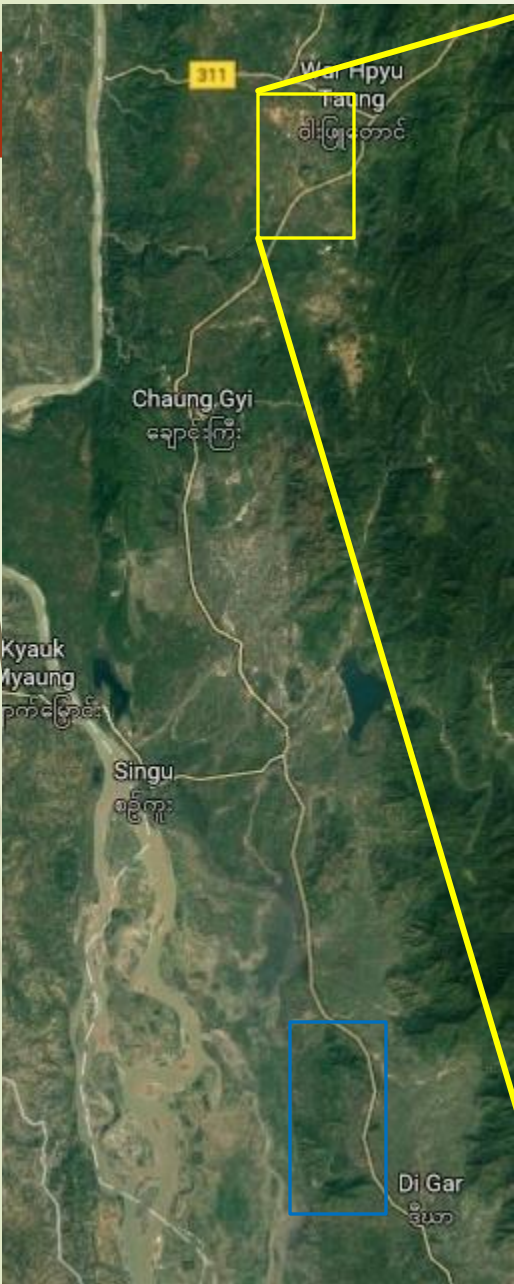
High radioactive sites

(Block B of Yatkansin Taung area)

➔ Pegmatiod floats and soil



Lan Lal Kyit Village Area



2017 Working progress: Meeting & Lab visit

Meeting in Nay Pyi Taw:



2017 Working progress: Meeting & Lab visit

Lab visit in Rangon:



2017 Working progress: Meeting & Lab visit

Lab visit in Rangon:



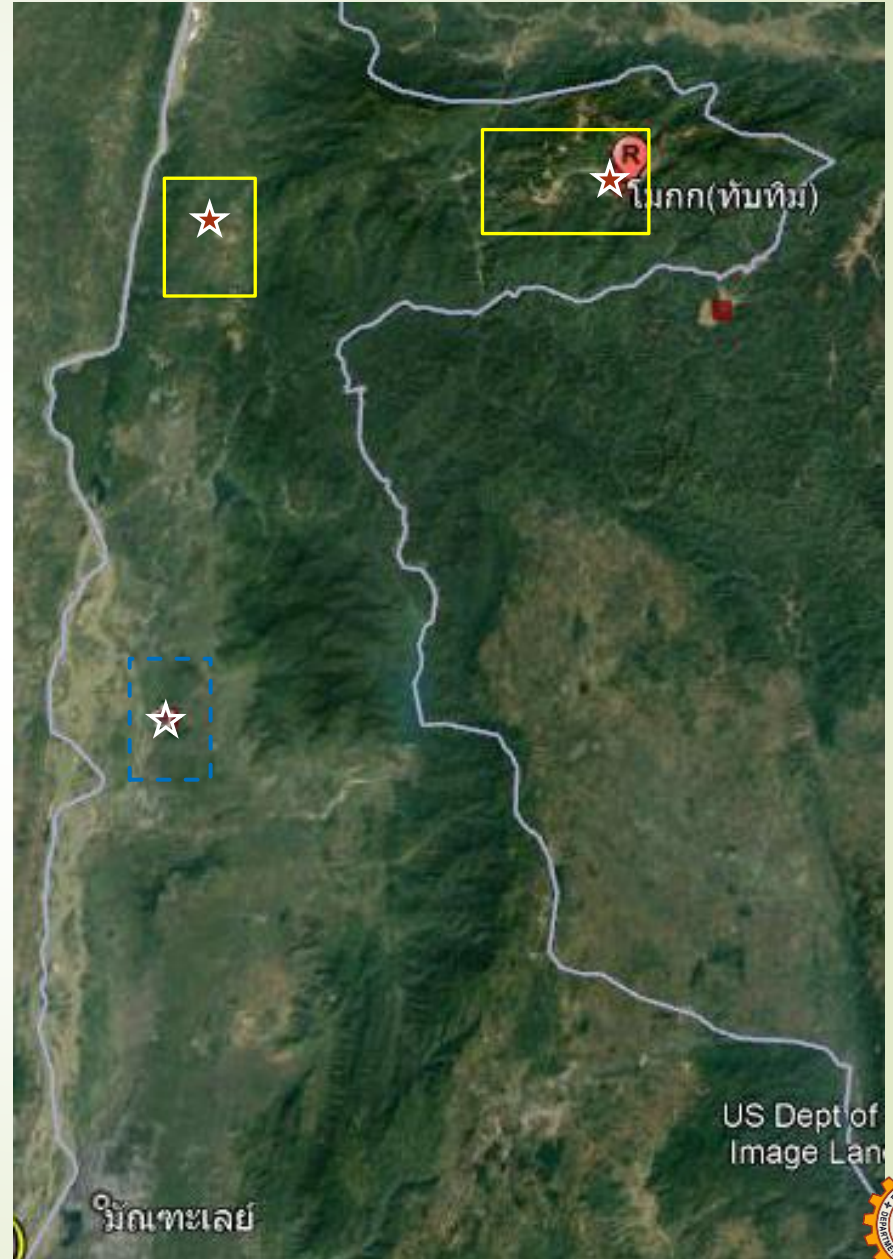
2018 Working plan:

- ❖ “Comparative Study on Mineralization of Gemstone in CLMTV region” 3-yr workplan (2017-19)

| Program | 2017 | 2018 | 2019 | Expect output |
|---|------------------------------|---|--|---------------------------------|
| 1. Project of joint studies on mineral resources | My & Th | Involving parties My, Th & C? | My, Th & C? | Study report(s) /paper(s) |
| 2. Technical working group meeting | - No. 1 (Th) - No. 2 (My) | - No. 1 (Th) - No. 2 (My/C?) | - No. 1 (Th) - No. 2 (My/C?) | Prepared work plan for approval |
| 3. Executive meeting | CCOP Side meeting (Thailand) | CCOP Side meeting (Philippines) | CCOP Side meeting (.....) | Work plan approval |
| Working Area | Yatkansin Taung | 1.Lan Lal Kyit-Mogok- Yatkansin Taung, 2.Pailin-Samlot? | 1.Lan Lal Kyit, Mogok 2. Pailin-Samlot-Rattanakiri? | |

Proposed 2018 Study sites:

❖ Myanmar.....Mogok metamorphic belt
(Lan Lal Kyit village, Mogok & Yatkansin
Taung)



Proposed 2018 *budget*:

❖ **Total 712,000.- ₪**

❖ for Working group meeting &
Field work in Myanmar: 512,000.-

❖ for Laboratory work : 200,000.-
(thin polished sections & EPMA analysis)

Acknowledgement for DGSE:

Especially... Dr. Myint Soe,
Mr. Mg Mg Naing and family
Mr. Han Lynn Moe.....





Thank you for
your attention



ကျေးဇူးတန်ပါတယ်။



Proposed Additional Study sites:

Cambodia.....Western (Pailin – Khum Samlot) and/or Eastern (Ratanakiri) gem fields



Regional Metamorphism

conditions: *amphibolite grade*

- A highly deformed sillimanite gneiss from Kyaukse the best estimate for peak metamorphism, calculated from the assemblage of Grt(core)+Bt+Ms+Sil+Pl+Qtz is $625 \pm 25^\circ\text{C}$ and $4.8 \pm 0.9\text{kb}$. Garnet-biotite temperatures for the retrograde equilibrium of garnet (rims) are $550 \pm 25^\circ\text{C}$
- K-feldspar augen gneisses represent metamorphosed intrusions of biotite granodiorite – granite that have been subjected to high-temperature metamorphism and postcrystallization ductile deformation. Stringers of garnets, sillimanite-rich with scattered biotite in heterogeneous granitic gneiss (K-feldspar > plagioclase) from Kyanigan quarry gave a relatively poorly P-T constrained result of about 680°C at $4.9 \pm 1.7\text{ kb}$ (Searle et al., 2007)



Possible Timing of Sapphire forming

..... $15.8 - 22.6 \text{ Ma}$

- ▶ Around Mogok town, a suite of nepheline syenites that contain gem quality sapphires intruding marble, gneiss and cutting metamorphic fabrics seem to be the youngest phase of magmatism and a U-Pb zircon age of $22.6 \pm 0.4 \text{ Ma}$, which was interpreted as the magmatic age, is from a biotite syenogranite in the southern part of the MMB near Yesin Dam [Barley et al., 2003].
- ▶ The youngest igneous phase in the MMB in the Mandalay area is a suite of undeformed biotite granites and syenogranites (Searle et al., 2007). Similar to undeformed Sedo granite and the Kabaing granite in the Mogok area where the latter has an $40\text{Ar}/39\text{Ar}$ age of $15.8 \pm 1.1 \text{ Ma}$ (Bertrand et al., 2001).



Rock strata

in Yarkansin Taung Area

► Marbles



Yatkansin Taung Area



General Project Objectives:

- ❖ To acquire new or update geological and mineral potential data, i.e. gem corundum as an initiative mineral, among CLMTV member.
- ❖ To promote collaborative relationship as well as exchange knowledge and experience among personnel.
- ❖ To build capacity on research techniques, experiences and technology on mineralization for young personnel.



General Outputs/Outcomes:

❖ 1. **Technical reports** of joint studies on gem corundum deposits and published conference paper(s).

❖ 2. **Updated data sets** on mineral resources database (for common uses among CLMTV).

❖ 1. **Knowledge and experience sharing** among CLMTV personnel can be applied for gemstone exploration.

❖ 2. **Sustainability on international relations** among the CLMTV countries.

❖ 3. **Stability of mineral resources for geological knowledge improvement** among the CLMTV countries.

❖ 4. **Leading to better socio-economic development** among the CLMTV countries.



General Project Impacts/Outreach:

- ❖ 1. All interested counterparts, both academic and non-academic and not limited to only among participating countries, will equally have an opportunity to access new information attained from this cooperation.
- ❖ 2. All datasets obtained from the study project could be publicly used as additional data supporting further mineral exploration program planning for gemstone material.
- ❖ 3. Data and Information obtained could provide an opportunity for CLMTV investors to acquire additional material source(s) supplying to the gem and jewelry industry.



Background:

➤ **2015 situation:**

- ❖ In February, DGSE and DMR initially agreed on conducting a collaborative research project for co-studying *on mineralization of corundum along gem-bearing formations*.

➤ **2016 situation:**

- ❖ DGSE-DMR co-research team (led by Dr. Myint Soe, U Saw Win and U Mg Mg Naing) made a short excursion trip to *Mt. Popa volcanic field, Singu basalt field* and *Yatkansin Taung metamorphic area* to observe a potential of *gem corundum mineralization*.

Current Implementing Agencies:

- **Co-researchers from Thailand Side:**
 - Department of Mineral Resources(DMR)
 - Gem and Jewelry Institute of Thailand(GIT)
 - Kasetsart University(KU) and other universities :

- **Co-researchers from Myanmar Side:**
 - Department of Geological Survey and Mineral Exploration(DGSE) currently including:
 - Dr. Myint Soe
 - U Mg Mg Naing
 - U Han Linn Moe &
 - U Phyo Saw Thwin



Initiative Study sites:

❖ **Thailand.....Eastern gem field**
(Chanthaburi – Trat area)

