

**NI 43-101 TECHNICAL REPORT**

**FOR THE**

**OROPESA PROPERTY**

**CORDOBA PROVINCE, REGION OF ANDALUCIA, SPAIN**

**OF**

**MINAS DE ESTANO DE ESPANA, S.L.U.**

**FOR**

**EUROTIN INC.**

**Effective Date : August 16, 2011**

**Signing Date : August 17, 2011**

**By**  
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## SUMMARY

Eurotin Inc., by means of a qualified transaction, has acquired all the issued share capital of Stannico Resources Inc. and now owns 100% of Minas de Estano de Espana. Minas de Estano de Espana, S.L.U. (MESPA) has earned a 50% interest and has the right to earn 100% ownership interest to the 23.4 km<sup>2</sup> Oropesa property, located in Cordoba Province, Region of Andalucia, southern Spain, from Sondeos y Perforaciones Industriales del Bierzo, S.A. (SPIB). The property consists of a single land block, Oropesa Investigation Permit #13.050, and is host to the **Oropesa tin deposit** and the **La Grana West and La Grana East tin occurrences** which were discovered in the 1980s by the Spanish government agency “Instituto Geologico y Minero de Espana” (IGME). The property has been dormant since 1990. There is paved road access to within 3 km of the property, from which farm roads branch off and provide convenient access to all parts of the property. Power lines of various capacity cross the area.

The property lies within the Ossa-Morena Zone of the Hercynian orogenic belt, a geological region of Spain and Portugal that has an extensive (> 3000 years) mining history dating back to pre Roman times. Of the zones within the Hercynian orogenic belt, the Ossa-Morena displays the greatest variety of mineralization types, as well as the largest number of mineral deposits and occurrences (>700). Commodities found in the area include iron, lead-zinc, copper, gold, silver, antimony, nickel, manganese, tungsten, tin, mercury, barite, uranium and coal. Within the immediate area of the property, the main commodities exploited have been lead-zinc and coal.

A south facing, south dipping, Devonian to Upper Carboniferous sequence of sedimentary rocks underlies the property. The northern portion of the property (Sierra de la Grana) is dominated by Devonian age quartzite with minor slate. Upper Carboniferous aged rocks to the south have been sub-divided into two units. Conglomerate, arenite and shale (plus minor metavolcanic, ash and epiclastic rocks) constitute the rock types of the lower **carbonatized detrital unit (UDC)**. Marker horizons that may be used to unravel the stratigraphy are lacking. Overlying the UDC are shale, arenite plus lesser conglomerate, porphyritic andesite and limestone of the **Culm facies unit (UFC)**. The contact between the Devonian and Carboniferous rocks has been observed in drill holes GR-10 and ORPD-29, - it is a highly tectonized contact and is interpreted to be a thrust fault. Granite of unknown age is present along the southern property boundary. The structural geology of the property and area is complex and poorly understood. NE and NNE striking faults have been mapped crossing the property. NW and WNW faults are suspected.

The Oropesa deposit, which was partially drill defined by IGME during the mid to late 1980s, has quoted (but not NI 43-101 compliant) resource estimates of 18 million tonnes grading 0.28% Sn or 8 million tonnes at 0.40% Sn. The original documentation for the resource estimates is not available, thus the Author was unable to verify these historical resource estimates nor ascertain by which methodology (sectional, Krieging, etc.) the estimates were determined. Cassiterite, the primary tin mineral, is reportedly fine grained (although coarse cassiterite was noted in the core), and is associated with pyrite, arsenopyrite, chalcopyrite galena and sphalerite. Stannite, another tin mineral is present in minor amounts. Tin and sulphide mineralization occurs primarily within zones of intensive hydrothermal alteration. Quartz veins and stockwork occur, but are not common, and are suspected to be mainly post

mineralization. At the La Grana occurrences, located approximately 1.5 km north of the Oropesa deposit, the cassiterite is coarser grained, and appears to occur in zones of brittle fracturing.

Since acquiring the property in 2008 MESPA has:

- ▶ Concluded exploration agreements with key surface rights holders;
- ▶ Re-viewed, re-assessed and re-interpreted the data collected by IGME;
- ▶ Developed an exploration model for tin emplacement on the Oropesa property;
- ▶ Conducted 2 phases of preliminary mineralogical and metallurgical scoping test studies on core and rock samples.
- ▶ Prospected the area in and about the mineral occurrences and in the process collected and assayed more than 160 rock samples;
- ▶ Completed a 19 trench (1004 m) program at La Grana West and La Grana East.
- ▶ Dug and sampled 9 small test pits in the Arroyo Majavacas flood plain in the southeastern part of the property to determine the potential for alluvial tin deposits.
- ▶ Conducted 2 programs of core hole drilling that comprised 57 holes at Oropesa (11,786.65 m) and 14 holes (2019.1 m) at La Grana West.

The property is considered to be at an early to mid stage of exploration evaluation. A two-phased exploration program comprising core and reverse circulation drilling, and metallurgical studies, as well as environmental baseline studies is recommended. The estimated costs for this program are € **4,800,000.00** (\$6,480,000 CDN) for **Phase I**, and € **6,300,000** (\$8,505,000 CDN) for **Phase II**.

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**FOR**

**EUROTIN INC.**

**INTRODUCTION AND TERMS OF REFERENCE**

**Background, Authorization and Purpose**

In April, 2011, Eurotin Inc. (Eurotin), a TSX - Venture listed company, acquired all of the issued share capital of Stannico Resources Inc. (Stannico), and by so doing also acquired Stannico's wholly owned Spanish subsidiary Minas de Estano de Espana (MESPA). MESPA, by means of an agreement with Sondeos y Perforaciones Industriales del Bierzo, S.A. (SPIB) dated February 15, 2008 and revised July 5, 2010, may acquire a 100% interest to the mineral rights to the 23.4 km<sup>2</sup> Oropesa Investigation Permit property #13.050, located in Cordoba Province, Region of Andalucia, southern Spain.

The property is host to the Oropesa tin deposit which was partially drill delineated and the La Grana West and La Grana East tin occurrences which were drill tested between 1982 and 1990 by the Spanish government agency "Instituto Geologico y Minero de Espana" (IGME). The general area has a long history of exploration and mineral production. Numerous mineral occurrences are documented in the area with production from lead-silver veins and coal beds. Although old and possibly ancient exploration workings were found on the property, there is no evidence to indicate that historical mining for any commodity has been conducted previously. Prior to MESPA acquiring the property, the property had been dormant since IGME terminated its exploration program in 1990.

By a letter dated July 25, 2011, Mr. Peter Miller, President and CEO of Eurotin Inc.

requested the preparation of a technical report to NI 43-101 standards for the Oropesa property. The report is to be used to support documents, such as a prospectus, which may be required by the Canadian regulatory authorities to support a recent special warrant financing by Eurotin. A copy of the Letter of Authorization is presented in **Appendix I**.

### **Scope and Limitations**

This report evaluates the mineral potential of the Oropesa property. Research of historic exploration activities was limited to the property and immediate surrounding area. Data examined to determine the geological setting for the region were sourced for a larger area within the district. The unit prices for various contractors, laboratory charges, professional fees, etc. have been researched, and are the going rates for Spain based or expatriate companies and individuals at the present time. Metric units are used throughout this report. Currency is expressed in Canadian dollars and / or Euros (€) as specified.

Eurotin has applied for and has been conditionally granted two additional permits - Coronada and Montuenga - with a combined area of 29.4 km<sup>2</sup>. Unless specifically indicated, this report deals with and only with the Oropesa Investigation Permit #13.050 property.

### **Sources of Information**

Sources of information are detailed below, and include those in the public domain as well as personally acquired data.

- Data supplied by MESPA / Eurotin;
- Review of various geological reports and maps produced by agencies of the Spanish government notably Instituto Tecnológico Geominero de España or its predecessor Instituto Geológico y Minero de España (IGME);
- Discussions with persons knowledgeable of the property and/or area, including **Sr. Francisco Jose Montero Caballero**, the director of “Litoteca de Sondeos” (a division of IGME) - a core storage and research facility in Penarroja-Pueblonuevo where all technical data, drill core, etc. for the Oropesa property produced by IGME are archived, **Mr. Peter Miller**, the President and CEO of Eurotin, **Sr. Victor Guerrero Merino** (EuroGeol), a geologist and a consultant to MESPA, **Sr. Francisco Fimbres**, a metallurgist and a consultant to MESPA and **Sr. Jairo Gomez Florido** and **Sr Francisco Canabate Marquez** both geologists under contract to MESPA.

- Data obtained from **Sr. Jose Malave Mora**, a geological consultant residing in Valverde del Camino, Andalucia, Spain;
- Various internet websites;
- Research of technical papers produced in various journals; and
- Discussions and correspondence concerning the legal aspects of the property with **Sr. Eduardo Olarte Soto**, MESPA's lawyer in Seville, Spain.

### **Personal Inspection**

The Author visited the property and MESPA offices and core logging / cutting facilities between August 4, 2011 and August 12, 2011. Notes with respect to the property visit and core review are presented in **Appendix II**. [The Author's previous visits to the property in April 2008 and March, 2010 were reported upon in Burns, 2010, and his visit in November 2010 was reported upon in Burns, 2011]. It is the Author's opinion that the core logging, data collection and core cutting are all being completed to industry standards and in a competent workman like manner.

### **Plan of Presentation**

MESPA's Oropesa property is presented, described and evaluated in accordance with the guidelines specified in National Instrument 43-101. Recommendations for a staged, multi discipline work program with cost estimates that are necessary and warranted to effectively advance the property towards a better understanding of its economic potential are put forward. Maps that accurately display property location, exploration history, geology and exploration potential are also included. [Note : To distinguish the Oropesa property from the Oropesa tin deposit, the area of the deposit may be referred to as such before the deposit was drill delineated.]

This report is based upon data available to the Author as of August 16, 2011. A draft copy of this Technical Report has been reviewed by MESPA personnel for factual errors, but the **Conclusions** and **Recommendations** presented herein are those of the Author.

### **RELIANCE ON OTHER EXPERTS**

The Author has endeavoured to obtain all current and historic documents and technical reports that are relevant to the property, and has assumed that those obtained are accurate and

complete. These documents have been carefully reviewed, but neither the completeness nor accuracy of the data could be verified. Data that were acquired verbally are clearly indicated.

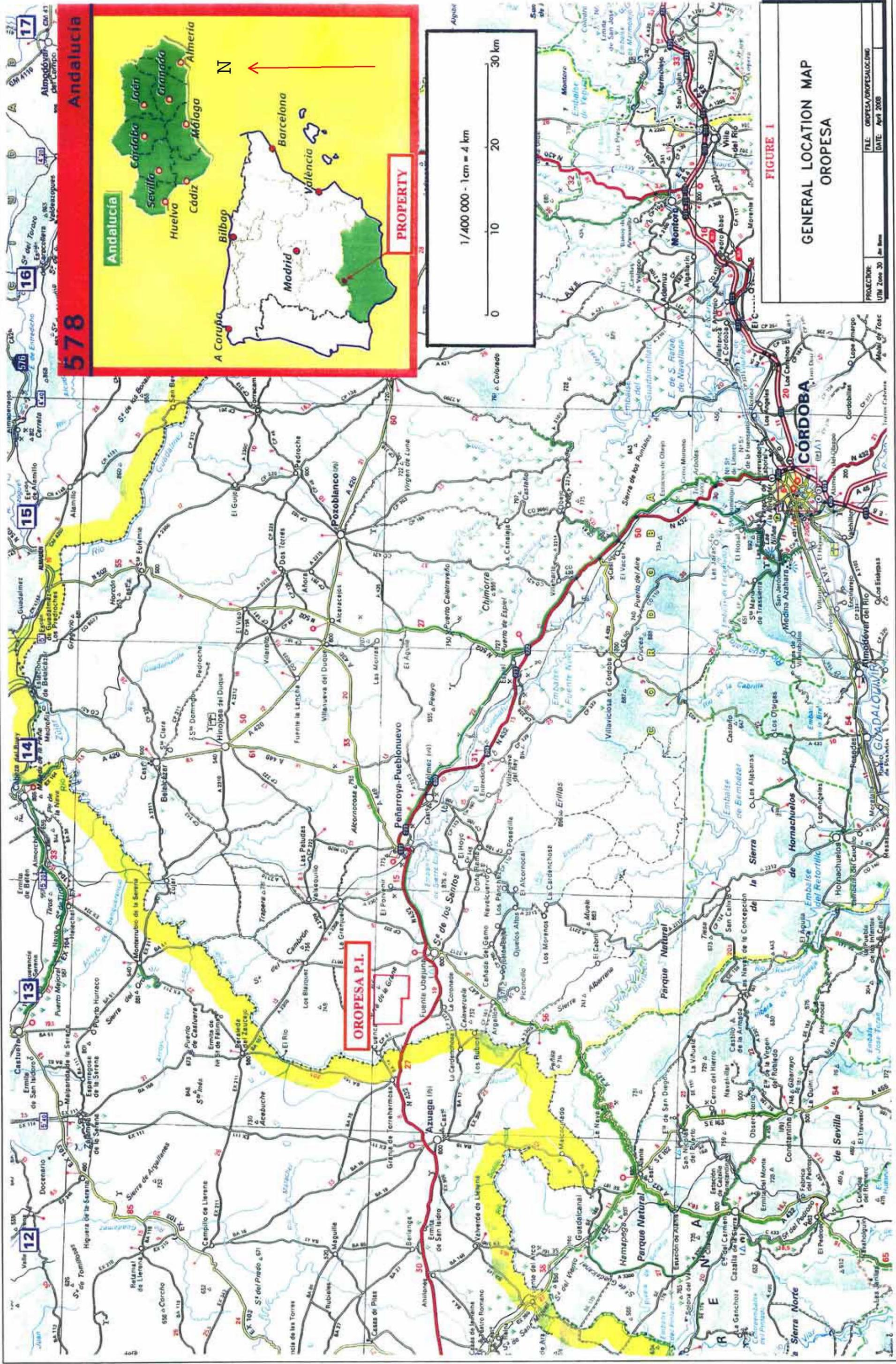
Any references to **resource estimates** are historic in nature, are referenced as to their source, but have not been verified by the Author and **SHOULD NOT** be relied upon as the original documentation pertaining to the resource estimate is not available for cross checking.

Copies of the following legal documents were reviewed in order to detail points of the contracts listed in a following section;

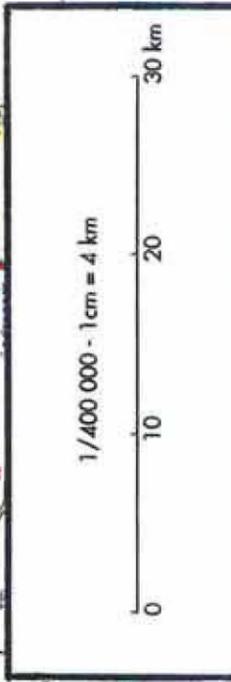
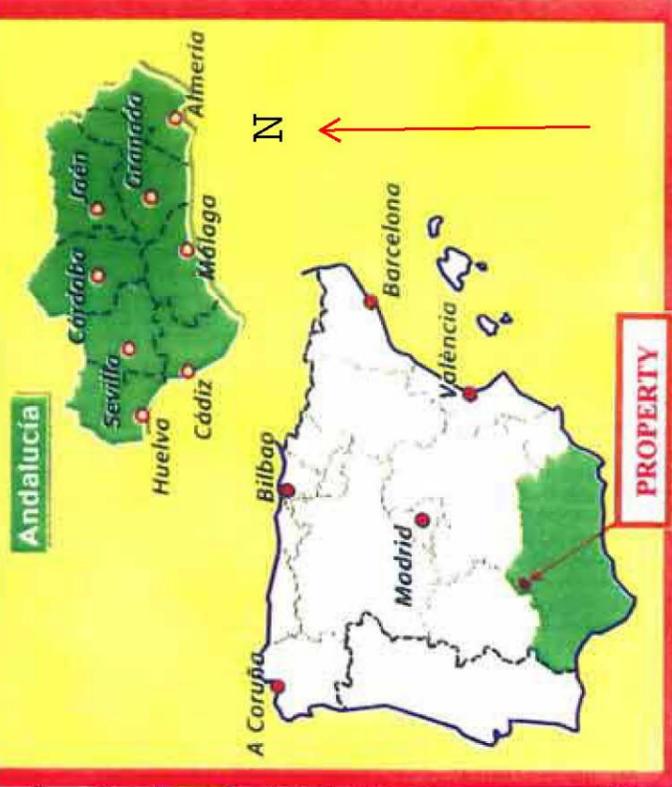
- “Contract of Rental and Sale-Purchase of Mining Rights” for the Oropesa property between MESPA and SPIB dated February 15, 2008;
- The revision to the above agreement dated July 5, 2010;
- The work agreement between MESPA and Minas de Aguas Tenidas S.A.U. (MATSA) dated March 13, 2008;
- The document issued by the Junta de Andalucia dated January 31, 2008 which describes the Oropesa property and by which the mineral rights to the Oropesa property were granted to SPIB.
- The agreement among Stannico Resources Inc., Eurotin Inc. and 2272048 Ontario Inc. dated March 15, 2011 by which Eurotin acquired all the issued shares of Stannico and Stannico’s wholly owned subsidiary MESPA.
- A legal opinion, dated August 2, 2011, written by Sr. Eduardo Olarte Soto, MESPA’s legal council in Seville, Spain, pertaining to MESPA’s entitlement to the Oropesa property, the current standing of the property, the situation regarding any liens or encumbrances against the property, the proximity of the property to National Parks and surface rights access to the property.

## **PROPERTY DESCRIPTION & LOCATION**

The Oropesa property is located in Cordoba province, Region of Andalucia, southern Spain, approximately 110 km north northeast from the city of Seville, and 75 km northwest from the city of Cordoba, the provincial capital (**Figure 1**). Approximate geographical coordinates for the property centre are 19° 00.0' north latitude by 5° 28.5' west longitude. It consists of Investigation Permit Oropesa number 13.050, comprises 78 “cuadrícula mineras” (defined below), and totals 23.4 km<sup>2</sup> (**Figures 2 & 3**). The property was issued for base and precious metals according to Section “C” of the Spanish Mining Act. It overlies a portion of Investigation Permit Guadiato IV



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**FIGURE 1**

**GENERAL LOCATION MAP**

**OROPESA**

|            |                       |        |
|------------|-----------------------|--------|
| PROYECTO:  | UTM Zone 30           | de Ben |
| FILE:      | OROPESA/PROFESIONALES | DATE:  |
| April 2008 |                       |        |





issued under Section “D” for coal, and to the east, it abuts State Reserve 379 also issued under Section “D” for coal (**Figure 3**).

Eurotin Inc. has applied for, and has been conditionally granted, two additional permits - P.I. Coronada (#13.076) which abuts Oropesa on the west and north, and P.I. Montuenga (#13.077) which adjoins Oropesa to the east (**Figure 2**). Coronada comprises 50 cuadrícula mineras with a surface area of approximately 15 km<sup>2</sup> while Montuenga entails 48 cuadrícula mineras with an area of about 14.4 km<sup>2</sup>.

The Oropesa property boundary has not been surveyed, and is not required to be surveyed. It is defined (in accordance with Spanish law) by geographical coordinates (**Table 1**).

**Table 1**  
**Oropesa Investigation Permit 13.050 - Boundary Corner Points**

| Point | West Longitude | North Latitude |
|-------|----------------|----------------|
| 1     | 5° 31' 00"     | 38° 20' 00"    |
|       | 5° 27' 00"     | 38° 20' 00"    |
| 3     | 5° 27' 00"     | 38° 17' 40"    |
| 4     | 5° 29' 00"     | 38° 17' 40"    |
| 5     | 5° 29' 00"     | 38° 18' 00"    |
| 6     | 5° 31' 00"     | 38° 18' 00"    |

According to the Spanish Mining Act (enacted in 1973), title to mining land may be held as an Exploration Permit (Permiso de Exploracion), an Investigation Permit (Permiso de Investigacion) or a Mining Concession (Concesion Minera). Mining land comprise blocks called “cuadrículas mineras”, and each cuadrícula minera measures 0° 00' 20" per side. Boundaries are aligned astronomic north - south and east - west.

Exploration Permits (PE) are issued for work using techniques that do not substantially alter the configuration of the land; ie research, regional surveys. They are issued for a one year period, and may be extended once. The minimum area for a PE is 300 cuadrículas mineras while the maximum is 3000 cuadrículas mineras.

Investigation Permits (PI), maximum allowable size 300 cuadrículas mineras, are required to conduct exploration activities, and are granted for a 3 year period with the anniversary date

deemed to be the date that the permit was granted. The permit holder must submit to the government a work proposal and budget for each year of the 3 year period. Any under expenditure or curtailing of the work program must be justified. If, in the opinion of the government, the permit holder has not made sufficient effort to undertake the proposed work, the PI may be revoked. Technical reports of all work undertaken must be submitted to the government. A small fee is payable along with the submission of a summary report of work undertaken, and nominal taxes are payable yearly. Two, 3 year period extensions may be requested to continue exploration, but must be justified. If the extension(s) is (are) accepted, the work proposal and budget submission process must be repeated. In exceptional circumstances, additional extensions may be requested.

Once an economic mineral deposit has been defined, the permit holder may apply for a Mining Concession (MC) for which the maximum size is 100 cuadrículas mineras. The MC may constitute only a portion of the PI, while the remainder of the PI remains as such. Boundaries of MCs, like PIs, are also aligned N - S and E - W and measure 0° 00' 20" per side. To obtain an MC, the permit holder must submit a mining plan, feasibility study, environmental impact study (EIS) and a restoration plan (RP). The EIS and RP must be approved by the governmental environment ministry (Consejería de Medio Ambiente). A mining concession is issued for 30 years, and may be extended twice. Should the economics of a project change negatively, the permit holder may apply for a "suspension of work" for a three year period, and must re-apply every three years.

The Oropesa Investigation Permit was granted to SPIB on January 31, 2008. Subsequently, on February 15, 2008 SPIB entered into a "Rental and Sale - Purchase" contract (in effect an earn in agreement) with MESPA by which MESPA could acquire a 100% interest to the mineral rights (as defined by Section "C" of the Mining Act) according to the following terms and conditions.

- » To acquire an initial 50% interest to the Oropesa property mining rights, over a three year period [the agreement was extended to December 31, 2011] MESPA was required to
  - Pay SPIB €18,000 annually; and
  - Conduct a minimum of €1,500,000 in drilling and other exploration expenditures.

**[MESPA has fulfilled these conditions and now beneficially owns 50% of the Oropesa property (Olarte Soto, 2011. No additional payments are required.)**

- » To obtain the remaining 50% interest MESPA may, at its option, either
  - Grant SPIB a 1.35% NSR royalty;
  - Or pay SPIB 0.9% of the contained metal in reserves at the time of feasibility.
  
- » Other Obligations
  - MESPA will employ SPIB as the drill contractor as long as the terms and conditions are competitive with the prevailing industry rates;
  - At the time of commercial production, MESPA will incorporate a company to exploit the deposit(s) and will grant SPIB a 4% equity interest in the newly incorporated company.

MESPA's lawyer in Spain, Sr. Eduardo Olarte Soto, has reviewed all legal documents with respect to the Oropesa property. It is his professional legal opinion that MESPA holds a beneficial 50% interest to the Oropesa property and has the right to acquire a further 50% according to the terms of the agreement with SPIB. MESPA's only other obligations are with respect to the Oropesa Investigation permit are:

- Pay to the government all fees and taxes as stipulated in the Mining Act;
- Comply with all terms and conditions that accompany the granting of the permit; and
- Perform all exploration work proposed in the current Plan de Labores and submit reports detailing the work completed with results;

Furthermore, by an agreement between MESPA and Minas de Aguas Tenidas, S.A.U (MATSA) dated March 13, 2008, MATSA will provide exploration and other technical services to MESPA, at cost, for a 3 year period. In return, MESPA shall give MATSA a 45 day exclusive right from the date of receiving a pre-feasibility study a one time opportunity to earn a participating 25% interest to the Oropesa property by reimbursing MESPA 200% of the costs incurred up to that time.

On December 27, 2010 SPIB filed with the Junta de Andalucia a report that summarized the exploration work completed in 2010 and a proposed exploration program for 2011 - 2012 that included trenching, geological mapping, core and reverse circulation drilling, drill core and drill chip logging, assaying, plus associated office support. The cost for the proposed program was estimated to be approximately € 419,200. SPIB also submitted work programs for the ensuing with estimated cost of € 485,600 for 2012-2013 and € 419,200 for 2013-2014 respectively.

The property is situated approximately 30 km north of Nature Park Sierra de Hornachuelos in Andalucia (**Figure 1**) and 100 km southeast of Nature Park de Cornalvo (near Merida) in

Extremadura Region. It is the opinion of MESPA's legal council that both parks are sufficiently distant from the property and that their existence should not be a factor to affect exploration work nor any future mining activities (Olarde Soto, 2011).

No permits are required to conduct basic exploration activities such as geological, geophysical or geochemical surveys, or trenching. Permits must be obtained from the relevant Consejeria (ministry) of the Junta de Andalucia in order to conduct exploration activities such as drill operations or any large scale stripping or bulk sampling program (Sr. J. Malave Mora and Sr. Victor Guerrero Merino pers. comm.). For the current drill program the required permit has been obtained (P. Miller pers. comm.).

Surface rights covering the Oropesa property are held by several farm owners. Although mining rights holders have the right to temporarily occupy the land in order to conduct exploration work, permission from the surface rights holders must be obtained prior to conducting any exploration activities. The usual practice is to reach a satisfactory agreement with the surface rights holder(s) (Sr. J. Malave Mora, pers. comm.). [Note : In the event that access permission cannot be negotiated with the property owner, the exploration company can apply for a "temporary occupation " order from the courts. This process takes 6 to 9 months to complete, but the land owner has no defence, and if necessary, the court order will be enforced by the police. In effect, the land owner cannot stop the exploration process.] Once a decision to put a mine into production has been made, the mining rights holder can expropriate the surface rights. For the Oropesa PI, MESPA has concluded access agreements with the key surface rights holders (Olarde Soto, 2011).

The property area is used for subsistence pig and sheep farming. There have been no industrial activities conducted on the property, therefore there are no environmental liabilities attached thereto. The existence of an ~15 m deep, unprotected shaft / pit that has been used, presumably by the local farmer, for garbage disposal was noted during the property visit, and as this shaft represents a potential public safety hazard, the situation has been brought to the attention of MESPA personnel.

## **ACCESS, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY**

There is paved road access to within 3 km of the property and vehicle access onto and across the property. From Seville, the regional capital, travel north on highway A-66 / E-803 for 133 km to highway N-432 junction. Continue eastward on N-432 for 96 km to the town of Fuente Obejuna. At Fuente Obejuna drive north towards the town of Los Blazquez on highway CO-9012 for 1.8 km to an intersection with a farm access road which leads north westward onto the property. Branch tracks and trails therefrom provide convenient access to all parts of the property (**Figures 1 & 2**).

The area experiences a modified Mediterranean climate characterized by short, mild winters and long, dry, hot summers. Daily temperatures (day and night) average 12° C from December through to February and 28° C in July and August. Total precipitation is about 640 mm, of which approximately half falls during the months of January to March. Normally, exploration and mining (both open pit and underground) may be conducted year round.

Andalucia boasts a long, rich mining history. Supplies and services required for both exploration and mining may be acquired in Seville - 110 km SSW (population ~1,000,000), Huelva - 140 km SW (population ~150,000), Cordoba - 75 km SE (population ~240,000), and Penarroja - Pueblonuevo, former coal mining town, - 16 km E (population ~15,000). A pool of professionals as well as skilled and semi skilled labour for both exploration and mining activities exists in these centres and in the many smaller, neighbouring towns. The area is laced with dual and multi-lane paved highways as well as tertiary gravel roads and farm tracks. Power transmission lines of various voltage capacity exist throughout the district. The nearest rail head is at Penarroja - Pueblonuevo some 16 km east of the property.

On the property, there is sufficient space for a mine, an on site mill, all ancillary buildings, tailings pond, etc. There are several water courses located on the property and in the immediate area that might be used to supply an adequate amount of water for exploration purposes, but reservoirs will probably be required for any mining operation.

Infrastructure on the property consists of several farm buildings, numerous dirt roads and farm tracks, a power line that serves the various farms, and a communication tower on Sierra de la Grana (**Figures 2 & 4**).



- LA GRANA Sn ANOMALIES
- OROPESA Sn ANOMALIES

**FIGURE 4**

AERIAL PHOTOGRAPH  
GENERAL PHYSIOGRAPHY

|                            |           |                                  |                  |
|----------------------------|-----------|----------------------------------|------------------|
| PROJECTION:<br>UTM Zone 30 | JIM BURNS | FILE: OROPESA\OROPESAFIGURE2.DWG | DATE: April 2008 |
|----------------------------|-----------|----------------------------------|------------------|

Topography on the property and in the general area is modestly rolling. On the property, the elevation ranges from ~550 m where the Arroyo Majavacas intersects the property east boundary to ~811 m at the summit of Sierra de la Grana in the property's north central quadrant (**Figure 2**).

The general physiography of the property and area is presented in **Figure 4**. Soil cover thickness, where exposed in trenches, is generally less than 1 m, but may be more along stream beds. The area is used primarily for pig and sheep farming, although some fields are planted with grain crops. At lower elevations where farming is undertaken, the principal tree species present is oak (the acorns are used as pig food prior to the animals being sent for slaughter). Undercover is generally sparse, typically thorn bushes and other shrubs. Sierra de la Grana, however, is thickly covered with jara bushes.

## **EXPLORATION HISTORY (pre MESPA)**

### **General (Tornos (b))**

The general Ossa-Morena area (see “**GEOLOGY**” section) has a long mining history. There is evidence that ancient cultures worked small Cu-Ag veins some 2000 years, B.C. Later, the Romans exploited many of the deposits that outcropped, including Pb-Ag veins of the area and, Cu-Au veins about Llerena (~45 Km W of the property). A Roman city, the ruins of which are located at Reina 40 km WSW of Oropesa, was apparently a taxation centre for the agricultural and mining industries of the district. After the Roman period, there is little evidence of extensive mining activities until the 1500's when some Cu-Au veins were exploited. Between 1848 and 1945 many mines exploited Pb-Ag veins in the Azuaga-Berlanga area 20 - 30 km W of Oropesa. To the east of the property, coal was mined from the mid 1800's and terminated only recently.

### **Regional and Property Exploration**

The government agency IGME is the only entity known to have conducted exploration on the Oropesa property. There is no evidence, either physical or recorded, to indicate that production of any mineral commodity has been attained from the Oropesa property.

***Medieval Times / Pre-Recorded History      Unknown Workers***

Two small (~3 m diameter) piles of slag ~10 m apart are located approximately 50 m north of drill hole collar OR-01 (in the central area of the Oropesa tin deposit). Both are level with the ground thus indicating that they are old to very old, and possibly date from medieval to earlier times. At the most easterly area, the slag is mainly cobble size (6 - 10 cm in diameter), while at the western most area pieces are generally no larger than 2 - 3 cm in diameter. Cobble to boulder size pieces of vuggy quartz vein are strewn about the immediate area. There are indications that the material may have been broken at site prior to being smelted. No evidence for the furnace remains.

***Probable last Century              Unknown Workers***

Two hand dug shafts approximately 10 m apart (also in the central area of the Oropesa tin deposit) are located some 300 m to the east of the slag area. The more southerly is an estimated 15 m deep, and measures ~3.5 x 2 m in area, whereas the more northerly is only 1.5 m deep by 2 x 1.5 m. As the spoil piles beside each shaft are still heaped, the workings are obviously much younger than the areas of slag. There is no record as to who dug the shafts or why. There are pieces of vuggy quartz vein in the spoil pile beside the deeper shaft.

***1969 - to Late 1990              Instituto Geologico y Minero de Espana : (IGME)***

In this time frame, IGME conducted multi disciplined exploration programs in the general region, and over and about the present Oropesa property in particular. The regional programs mainly comprised geological mapping at 1:50,000 scale, plus stream sediment geochemical surveys. This work led to the discovery of tin on the present Oropesa property. Unfortunately, the programs on the Oropesa property ended with some aspects of the exploration not being fully reported upon, and some reports have gone missing.

The following chronological exploration history is a summary of the reports plus numerous additional maps, plans and sections that are available. Some details on portions of the exploration program conducted by IGME were provided verbally by Sr. Francisco Jose Montero Caballero who is the director of the "Litoteca de Sondeos" facility in Penarroja-Pueblonuevo. All data for the project are stored at the "Litoteca de Sondeos" facility in Penarroja-Pueblonuevo, including some reports, maps-plans-section, drill core, geochemical and core sample pulps and rejects, as well as bags of crushed rocks and drill core that were prepared for metallurgical test work but never used.

**Regional Area**

***(1969 - 1980)***

Various phases of geological mapping were conducted on State Reserves in the general area

(Delgado Quesada, 1984). This work culminated in the discovery in 1979 of the El Paredon poly-metallic sulphide Cu-Pb-Zn-Ag-Au deposit located some 15 km SSE from Penarroya-Pueblonuevo within lower Carboniferous volcano-sedimentary series rocks.

### **(1982)**

Geological mapping at 1:50,000 scale was completed for the Penarroya - Pueblonuevo map sheet # 879 (which covers the Oropesa property), and the resultant report (IGME, 1985) was published in 1985. A portion of the map is present as **Figure 5**. The surrounding map sheets were mapped at about the same time. Concurrent with the mapping program, a stratigraphic synthesis was undertaken of the Carboniferous rocks of the region. It was during the mapping program that the Oropesa tin mineralization was first identified and determined to occur in a carbonatized detrital unit of lower Carboniferous age. Furthermore, two types of vein systems in the region were recognized; **a)** veins of galena and fluorite with minor chalcopyrite and / or barite, and **b)** banded copper-tin veins such as the Oropesa deposit (Delgado Quesada, 1984).

## **Oropesa Property & Immediate area**

### **(1983 - 1990)**

Exploration on the Oropesa property was centred upon two Sn areas - Oropesa and La Grana. La Grana is situated approximately 1.5 km N of Oropesa. Elements of the exploration program conducted included, **1)** detailed geological mapping, **2)** stream sediment geochemical survey, **3)** panned stream sediment geochemical survey, **4)** soil geochemical survey including a test study, **5)** ground Induced polarization / resistivity, magnetometer and VLF electromagnetic surveys, **6)** a helicopter borne magnetic- electromagnetic-VLF electromagnetic survey, **7)** trenching, **8)** core drilling and **9)** mineralogical / metallurgical test studies. The exploration conducted was concentrated on two tin mineralized areas - Oropesa and La Grana. However, the geological compilation and detailed mapping, the stream sediment survey, and the airborne geophysical survey covered the entire property plus extensions therefrom. Much of this exploration work was completed in overlapping multi-phases. Summaries of work undertaken and results follow, and are based upon Delgado Quesada (1984) [the only project summary report available], various maps on file in Litoteca de Sondeos facility in Penarroya-Pueblonuevo, geophysical reports for surveys conducted and personal communication with Sr. Francisco Jose Montero Caballero and others of his staff.

### **Geological Compilation**

All geological information for the Fuente Obejuna Reserve (Area 1) was compiled at 1:25,000 scale. It was apparent that the Carboniferous stratigraphy in the Oropesa area was problematic, and that the scale of mapping available was insufficient for exploration purposes (Delgado Quesada, 1984).

### **Detailed Geological Mapping Survey**

Geological mapping was conducted over the entire property plus general area between



1982 and 1988, but only a report (Delgado Quesada, 1984) for a portion of the mapped area is available. Part of the geological map produced in 1989 is included as **Figure 6**. The carbonatized detrital host unit for the tin mineralization comprising mainly conglomerate and arenite rocks was successfully traced across the property. Several NE to NNE faults were interpreted to cut the host unit. More details are presented in the section titled **Local Geology**.

### **Stream Sediment Geochemistry Survey**

Approximately 130 samples were collected from an ~115 km<sup>2</sup> area including the entire property and along strike to the east and west. This work was completed in two phases, but only the first phase (for 80 samples) is reported upon by Delgado Quesada (1984). Results for the remaining samples are in map form only. It is assumed that in the subsequent phase the same exploration procedures were followed. These samples were analyzed for Cu, Pb, Zn and Sn. No details are available as to how the samples were collected nor of the analytical methodology. Values obtained across the entire area sampled ranged between 6 and 147 ppm Cu, <10 and 183 ppm Pb, 10 and 140 ppm Zn, and <10 and 650 ppm Sn. By far, the best tin values were found in the area of the Oropesa tin deposit. The better Cu, Pb and Zn values do not necessarily correlate with the higher tin values and vice versa.

An additional 36 samples were collected from the same area, and were concentrated first by panning, then heavy liquid separation and finally using a Frantz magnetic separator. Descriptive information is only available for the original 20 samples which were collected in the southeastern third of the Oropesa property and a similar sized area adjoining to the east. Samples were examined for their mineralogical content using a binocular microscope at Granada University by Dr. D. Antonio Arribas. Cassiterite was identified in 13 samples, and in amounts rated (by him) as “abundant” or “frequent” in 5 of the samples. There is no apparent correlation with other minerals. As to be expected, the best results were obtained from samples immediately down stream from the Oropesa tin deposit (#2, 3, 4 & 7). One highly anomalous sample (#9) was collected north of the Oropesa tin deposit, and is most probably related to the La Grana tin occurrence. Interestingly, samples #10, 11, 12 & 13 tested the east end of the Sierra de la Grana, and all contained trace to rare amounts of cassiterite. Sn values for the remaining samples are only available in map form.

### **Combined Airborne Magnetic, Electromagnetic and VLF Survey**

This helicopter borne survey was flown by Aerodat Ltd., (based in Mississauga, Ontario) in December 1987 and January 1988 (Podolsky, 1988). On board geophysical equipment included an Aerodat 4 frequency electro-magnetic system, a Totem 2A VLF unit (tuned to Rugby, England at 16.0 KHz), and a Scintrex VIW-2321 H8 magnetometer (towed 12 m below the helicopter). Lines were flown at 030°, at an average ground clearance of 60 m, and normally spaced 400 m apart, but in certain areas at 200 m intervals. The area flown covered ~160 km<sup>2</sup>, including all of the Oropesa property.



Total magnetic variation across the area flown was approximately 400 nT. Across and about the property area, the contoured magnetic data are aligned in a general E-W to ESE-WNW direction, and are relatively regular except in the Sierra La Grana - Oropesa area where they are disrupted by a low amplitude (<6 nT), 2000 m long by 1000 m wide oval shaped magnetic high. Associated with this oval feature is a small, apparent resistivity high. One electro-magnetic anomaly appears coincident with the Oropesa tin deposit while another appears to extend westward from the La Grana occurrences.

### **Test Soil Geochemical Study**

In ~ 1989 - 1990, IGME undertook a test soil geochemical survey across the Oropesa deposit and the two La Grana tin occurrences in an effort to determine the multi-element signature of the deposit and the basic parameters such as soil horizon to be sampled - the ideal sample grain size fraction to be analyzed, and minimum sample density for a regional survey (Lopez Pamo et al., 1990). At the Oropesa tin deposit area, the survey covered 1.2 km<sup>2</sup>. Samples were collected on 11 lines 1200 m long spaced 100 m apart and oriented at 030°. Only 2 short lines (~500 m long) were sampled in the area of the La Grana tin occurrences. Line direction and sample density were the same as those in the Oropesa area. The upper "B" soil horizon was sampled, except in areas of outcrops where a surface soil sample was collected, and the -80 mesh fraction (-0.177 mm) for all 575 samples collected were sent for analysis. In addition at the Oropesa tin deposit, 23 holes 1.5 to 2 m deep were dug with an excavator, with 69 samples collected from the "A", "B" & "C" horizons. These 69 samples were screened to produce 3 fractions each; -0.250 / +0.177 mm, -0.177 / +0.125 mm and < 0.125 mm. All samples were analyzed for a suite of 23 metallic elements, 20 by ICP and the other 3 elements (including Sn, W and F) by colorimetry, and the results treated statistically. Conclusions from this study were that:

- The -80 mesh (-0.177 mm) material from the A-B soil interface is acceptable material.
- The treated data identified not only the Sn zones, but also the hydro thermal alteration associated therewith.
- The mineralization and / or hydrothermal alteration zone is detectable at a sample density of 100 x 250 m.

### **Oropesa Tin Deposit Area**

A semi regular grid of 25 lines spaced +/- 100 m apart and oriented at 020° was established in the Oropesa deposit area. The results for the geochemical surveys and drill hole locations are shown on **Figure 7**.

### **Soil Geochemistry Survey**

A total of 665 soil samples were collected at 25 m spacings along the grid lines. Work

was completed in two phases, but results for only the first phase of 400 samples are reported upon by Delgado Quesada (1984). It is assumed that during the subsequent phase(s) the same exploration procedures were followed. Line lengths varied from 500 to 1300 m, but the grid basically covered the Oropesa deposit stratigraphy over a 2500 m strike length. The soil horizon sampled is not stated in the Delgado Quesada (1984) report. Samples were analyzed for Sn, Cu, Pb and Zn at a commercial laboratory named "Laboratorios Almeria, S.A." (Laboral) by atomic absorption (AA) methodology. Whether or not the laboratory was ISO certified at the time is not known. A statistical analysis of the data set revealed anomalous to highly anomalous values to be >134 ppm for Cu, >383 ppm for Pb, >432 ppm for Zn and >522 ppm for Sn.

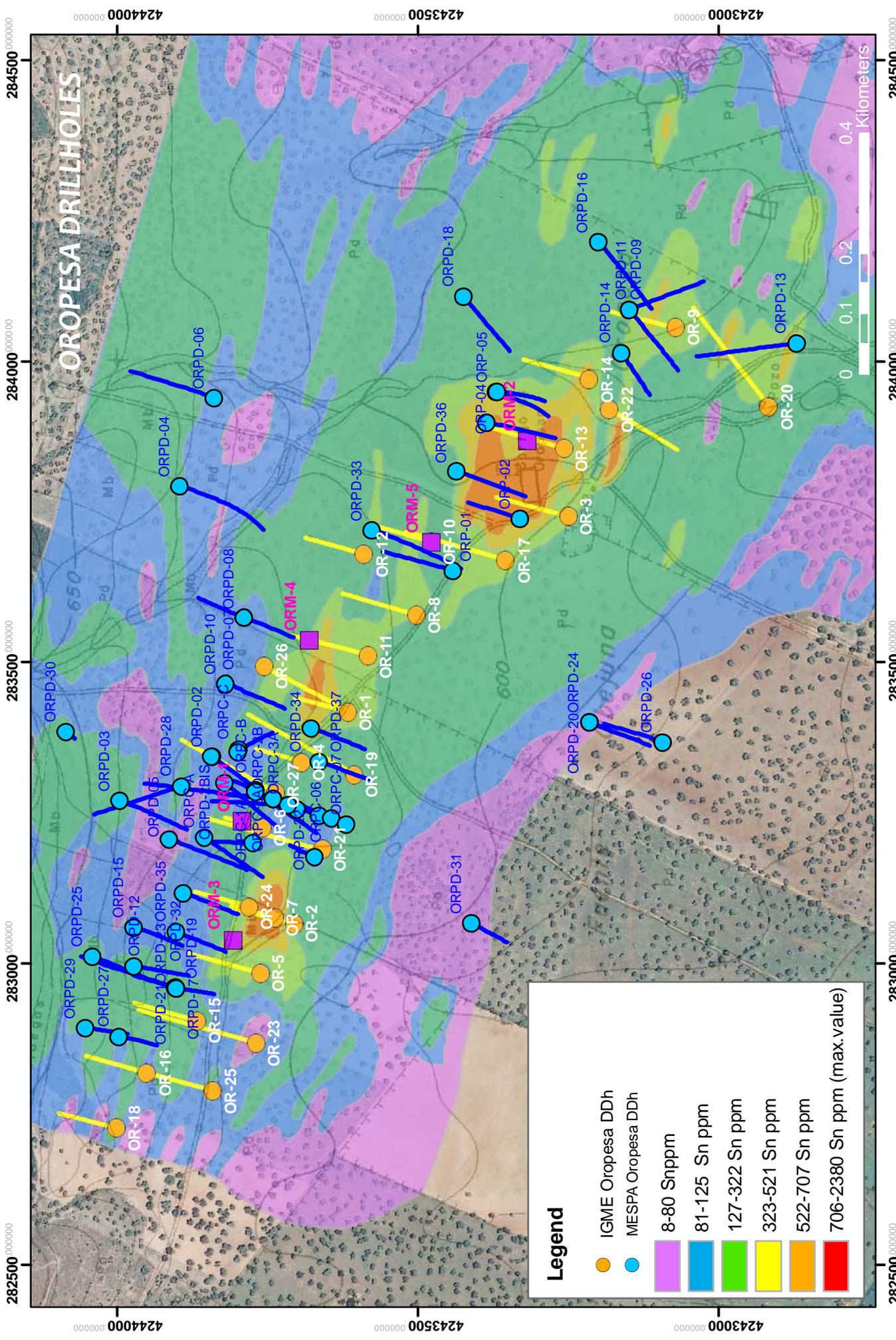
Results of the survey delineated a large anomalous area (as defined by the 125 ppm contour) roughly 2000 m long NNW / SSE by 200 to 700 m wide within which three distinct anomalous centres of higher Sn values were detected (**Figure 7**). The **Western** centre is represented by two stations over a 100 m strike length with values of 1120 and 1300 ppm Sn respectively. Sn values drop off rapidly in all directions. There are anomalous correlating Cu & Pb values. The **Central** centre also about 100 m long with three high values of **645**, **1790** and **570** ppm Sn. It strikes more or less east - west, and aligns with the **Western** centre. Anomalous Cu and Zn values are coincident with Sn. The **Eastern** centre is the largest. It is about 150 m wide by about 350 m long, but thins out rapidly along strike to the northeast and southwest. Values range from 580 to 2300 ppm Sn, with Cu, Pb and Zn values coincident with Sn. All three Sn centres lie within a very broad, low to moderately anomalous zone extending in a WNW direction for 2000 m. Interestingly, there are elevated Sn values at the very north end of the grid lines near the base of the Sierra de la Grana. These values may reflect indications for a second band of mineralization, either that of La Grana occurrences to the north, or possibly related to the contact between the Devonian and Carboniferous stratigraphy at the base of Sierra de la Grana.

### **IP - Resistivity Geophysical Survey**

A 10.075 km, pole - dipole survey was completed in two phases (1983 & 1985) along ten of the geochemical grid lines. The first phase was reported upon by Delgado Quesada, (1984), whereas data for the second were obtained from plans and sections. The "a" spacing between the potential electrodes for both phases was 25 m. In the first phase, the distances used from the current electrode to the nearest potential electrode were 150 and 300 m, and for the second phase 100 and 200 m. No details are available as to the type of instrumentation used. Results were tabulated in Burns, 2010 (Table 2). In general, there is a positive correlation between chargeability anomalies and Sn geochemical anomalies.

### **VLF Electromagnetic and Magnetometer Surveys**

These surveys, as reported upon by Garcia Lubon (1986) and Martinez Molono (1986), totalled 14.775 km each, and were conducted across the mineralized Sn horizon including



# OROPESA DRILLHOLES

- Legend**
- IGME Oropesa DDh
  - MESPA Oropesa DDh
  - 8-80 Snppm
  - 81-125 Sn ppm
  - 127-322 Sn ppm
  - 323-521 Sn ppm
  - 522-707 Sn ppm
  - 706-2380 Sn ppm (max.value)

Projection UTM  
 European Datum 1950  
 Zone 30

**FIGURE 7**

OROPESA PROJECT: Oropesa Tin Area      Data Compilation

Location: Cordoba province, Spain      Date: 10-08-2011

the three anomalous geochemical areas for a strike length of 1.9 km. The instruments used were a Geometrics G-816 magnetometer and a Scintrex Scopas SE-81 VLF receiver. The VLF transmitter station is not indicated. Readings were taken at 25 m intervals on lines 100 m apart. Lines paralleled the geochemical grid lines. Data were smoothed using a moving average method.

Four VLF electromagnetic conductors were identified. Three run more or less east -west, and are associated with the geochemical anomalies and with the mineralized zones. The fourth runs along the road in a general NW direction and may be due to cultural influences (fence). Results for the magnetic data are inconclusive.

### **Trench Excavation and Sampling**

Between 1982 and 1986, 26 trenches with a cumulative length of 2681 m were dug to bedrock on the Oropesa Sn deposit (Delgado Quesada, 1984, plus trench sections). See Burns, January 2011 Figure 7 for locations. Most were oriented at approximately 020°, and were dug into rock with a maximum depth penetration of ~3 m. The purpose of the first 9 trenches appears to have been to expose mineralization after the initial discovery, and for the remaining 14 to test geochemical and / or geophysical anomalies.

All trenches were mapped in detail, but systematic sampling was only conducted on the last 14, however there is no description of the sampling methodology except as noted on the sections; ie. that the samples were of rock, and were taken over 2.5 to 12 m lengths. Samples were assayed at the IGME laboratory in Madrid (Sr. F.J. Montero Caballero, pers. comm.), by XRF methodology. General information with respect to the trenches were summarized in Burns, 2010 (Table 3).

### **Core Drilling**

Between 1983 and 1990, a total of 33 core holes with a cumulative length of 6913.55 m were drilled to delineated the Oropesa tin deposit. Most were drilled at 020°. Drill hole locations are shown on **Figures 7**. [Note the drill hole prefix may be either S or OR for the first 27 holes and either SM or ORM for another 5 holes.] General data for the holes are recorded in **Table 2**. Significant intercepts at 0.10% Sn cutoff are listed in **Table 3**, and results are discussed in the section titled “**MINERALIZATION**”. No report is available that describes the purpose and interpreted results for the overall drill program or individual holes. Also not available are interpreted cross sections, longitudinal section(s) or drill plan(s). Delgado Quesada (1984) reported upon holes OR-3, 4 & 6, but most information was obtained from graphic drill logs that are available for all holes except ORM- 4 & 5. Judging by the positions and spacings of holes OR - 1 to 27 vis a vis the geochemical and other data, these holes were designed to delineate the deposit and / or test geophysical anomalies. Holes ORM-1 to 5 and OROCU were drilled to obtain samples for mineralogical / metallurgical studies (Sr. F. J. Montero Caballero, pers. comm.).

**TABLE 2**  
**IGME : Oropesa Tin Deposit Drill Hole Data**

| Hole No. | Year Drilled | Azimuth (mag) | Dip  | Length (m) | x Coordinate* | y Coordinate* | Elevation (m) | Anomaly Tested   |
|----------|--------------|---------------|------|------------|---------------|---------------|---------------|------------------|
| OR - 1   | 1982 / 83    | 20            | 60 N | 181.10     | 283316        | 4243712       | 621           | Central          |
| OR - 2   | 1984         | 20            | 60 N | 205.80     | 283173        | 4243806       | 614           | West             |
| OR - 3   | 1984         | 20            | 60 N | 247.35     | 283742        | 4243268       | 602           | East             |
| OR - 4   | 1984         | 20            | 60 N | 157.50     | 283220        | 4243745       | 620           | Central - W ext  |
| OR - 5   | 1984         | 20            | 60 N | 242.00     | 283124        | 4243689       | 615           | West - W ext     |
| OR - 6   | 1984         | 20            | 60 N | 134.80     | 283099        | 4243779       | 620           | West - E ext     |
| OR - 7   | 1984         | 20            | 60 N | 141.90     | 283121        | 4243686       | 618           | West             |
| OR - 8   | 1985         | 20            | 60 N | 257.30     | 283610        | 4243450       | 612           | Central - SE ext |
| OR - 9   | 1985         | 20            | 60 N | 201.60     | 284065        | 4243980       | 598           | East - SE ext    |
| OR - 10  | 1985         | 20            | 60 N | 175.05     | 283700        | 4243410       | 610           | Central - SE ext |
| OR - 11  | 1985 / 86    | 20            | 60 N | 244.20     | 283510        | 4243587       | 615           | Central          |
| OR - 12  | 1986         | 20            | 60 N | 195.90     | 283710        | 4243520       | 615           | Central - E ext  |
| OR - 13  | 1986         | 22            | 50 N | 200.65     | 283870        | 4242185       | 602           | East             |
| OR - 14  | 1986         | 20            | 50 N | 180.95     | 283985        | 4242155       | 594           | East - SE ext    |
| OR - 15  | 1986         | 20            | 60 N | 210.50     | 282903        | 4243860       | 623           | West - NW ext    |
| OR - 16  | 1986         | 20            | 60 N | 201.85     | 282820        | 4243960       | 633           | West - NW ext    |
| OR - 17  | 1986         | 20            | 60 N | 340.00     | 283667        | 4243361       | 605           | East - W ext     |
| OR - 18  | 1986         | 20            | 60 N | 195.70     | 282720        | 4244007       | 637           | West - NW ext    |
| OR - 19  | 1986 / 87    | 37            | 60 N | 400.00     | 283329        | 4243606       | 619           | Central - W ext  |

**TABLE 2**  
**IGME : Oropesa Tin Deposit Drill Hole Data**

| Hole No.          | Year Drilled | Azimuth (mag) | Dip  | Length (m)     | x Coordinate* | y Coordinate* | Elevation (m) | Anomaly Tested   |
|-------------------|--------------|---------------|------|----------------|---------------|---------------|---------------|------------------|
| OR - 20           | 1986 / 87    | 57            | 50 N | 309.55         | 283918        | 4242926       | 584           | East - SE ext    |
| OR - 21           | 1987         | 20            | 50 N | 300.85         | 283200        | 4243656       | 616           | West - E ext     |
| OR - 22           | 1987         | 215           | 60 S | 253.45         | 283914        | 4243208       | 598           | East - SE ext    |
| OR - 23           | 1987         | 20            | 50 N | 320.10         | 282882        | 4243765       | 614           | West - W ext     |
| OR - 24           | 1987         | 20            | 60 N | 175.25         | 283090        | 4243796       | 621           | West             |
| OR - 25           | 1987         | 20            | 50 N | 179.20         | 282792        | 4243852       | 620           | West - W ext     |
| OR - 26           | 1987         | 32            | 60 N | 306.10         | 283486        | 4243751       | 628.2         | Central          |
| OR - 27           | 1987         | 37            | 50 N | 270.20         | 283299        | 4243732       | 620           | Central - NW ext |
| ORM - 1           | 1987 / 88    | 0             | 90   | 150.05         | 283241        | 4243791       | 622           | West - E ext     |
| ORM - 2           | 1987         | 0             | 90   | 150.20         | 283865        | 4243338       | 602           | East             |
| ORM - 3           | 1989         | 0             | 90   | 162.00         | 283035        | 4243818       | 621           | West - NW ext    |
| ORM - 4           |              |               |      | 213.30         |               |               | 622           |                  |
| ORM - 5           |              |               |      | 242.30         |               |               | 610           |                  |
| OROCU             | 1990         | 20            | 50 N | 222.45         | 283835        | 4243830       | 625           |                  |
| <b>Total IGME</b> |              |               |      | <b>7369.15</b> |               |               |               |                  |

\* European 1950 datum, zone 30S

**TABLE 3**  
**IGME : Oropesa Tin Deposit Drill Hole Assay Intercepts (0.10% Sn cut-off)**

| Hole No. | Zone             | # of Assays | From (m) | To (m) | Length (m)* | % Sn        |
|----------|------------------|-------------|----------|--------|-------------|-------------|
| OR - 1   | Central          | 62          | 11.20    | 13.00  | 1.80        | <b>2.4</b>  |
|          |                  |             | 67.50    | 82.00  | 12.50       | 0.16        |
|          |                  |             | 106.00   | 117.00 | 11.00       | <b>0.32</b> |
|          |                  |             | 152.00   | 153.00 | 1.00        | <b>0.88</b> |
| OR - 2   | West             | 50          | 134.20   | 156.20 | 22.00       | 0.14        |
| OR - 3   | East             | 27          | 158.00   | 163.00 | 5.00        | 0.12        |
|          |                  |             | 201.30   | 231.30 | 30.00       | 0.13        |
| OR - 4   | Central - W ext  | 43          | 21.30    | 25.00  | 3.70        | 0.15        |
|          |                  |             | 49.00    | 50.45  | 1.45        | 0.12        |
|          |                  |             | 64.05    | 148.70 | 84.65       | 0.16        |
| OR - 5   | West - W ext     | 51          | 65.00    | 68.00  | 3.00        | 0.18        |
|          |                  |             | 143.00   | 145.00 | 2.00        | 0.11        |
|          |                  |             | 171.00   | 180.00 | 9.00        | 0.17        |
|          |                  |             | 221.00   | 223.00 | 2.00        | 0.12        |
| OR - 6   | West - E ext     | 40          | 41.70    | 124.00 | 82.30       | <b>0.66</b> |
| OR - 7   | West             | 35          | 0.00     | 8.00   | 8.00        | 0.17        |
| OR - 8   | Central - SE ext | 65          | 107.40   | 116.00 | 8.60        | 0.12        |
|          |                  |             | 135.30   | 139.50 | 4.20        | <b>0.2</b>  |
|          |                  |             | 153.95   | 187.00 | 33.05       | 0.14        |
|          |                  |             | 194.00   | 197.00 | 3.00        | 0.11        |
|          |                  |             | 212.00   | 243.40 | 31.40       | 0.18        |
| OR - 9   | East - SE ext    | 0           |          |        |             |             |
| OR - 10  | Central - SE ext | 26          | 14.00    | 19.00  | 5.00        | 0.12        |
| OR - 11  | Central          | 50          | 8.00     | 17.00  | 9.00        | 0.11        |
|          |                  |             | 21.00    | 33.00  | 12.00       | <b>0.2</b>  |
|          |                  |             | 72.05    | 80.00  | 7.95        | <b>0.23</b> |
|          |                  |             | 166.00   | 169.00 | 3.00        | 0.12        |
|          |                  |             | 172.00   | 231.00 | 59.00       | <b>0.39</b> |
| OR - 12  | Central - E ext  | 5           |          |        |             |             |
| OR - 13  | East             | 42          | 75.00    | 101.00 | 26.00       | <b>0.49</b> |
|          |                  |             | 108.00   | 108.70 | 0.70        | <b>0.26</b> |
|          |                  |             | 182.30   | 184.30 | 2.00        | <b>1.19</b> |
| OR - 14  | East - SE ext    | 1           |          |        |             |             |
| OR - 15  | West - NW ext    | 40          | 13.00    | 21.60  | 8.60        | <b>0.61</b> |
| OR - 16  | West - NW ext    | 21          | 82.15    | 83.00  | 0.85        | 0.14        |
|          |                  |             | 133.00   | 136.00 | 3.00        | 0.18        |

**TABLE 3**  
**IGME : Oropesa Tin Deposit Drill Hole Assay Intercepts (0.10% Sn cut-off)**

| Hole No. | Zone             | # of Assays | From (m) | To (m) | Length (m)* | % Sn        |
|----------|------------------|-------------|----------|--------|-------------|-------------|
|          |                  |             | 152.00   | 155.00 | 3.00        | 0.11        |
| OR - 17  | East - W ext     | 82          | 98.00    | 100.00 | 2.00        | 0.15        |
|          |                  |             | 107.00   | 111.00 | 4.00        | 0.16        |
|          |                  |             | 154.00   | 158.00 | 4.00        | 0.17        |
|          |                  |             | 182.00   | 250.00 | 68.00       | 0.15        |
| OR - 18  | West - NW ext    | 5           |          |        |             |             |
| OR - 19  | Central - W ext  | 68          | 18.75    | 22.00  | 3.25        | 0.13        |
|          |                  |             | 83.00    | 115.00 | 32.00       | 0.18        |
| OR - 20  | East - SE ext    | 15          |          |        |             |             |
| OR - 21  | West - E ext     | 55          | 148.00   | 164.00 | 16.00       | <b>0.24</b> |
|          |                  |             | 182.00   | 192.00 | 10.00       | 0.17        |
| OR - 22  | East - SE ext    | 44          |          |        |             |             |
| OR - 23  | West - W ext     | 58          | 304.00   | 306.00 | 2.00        | 0.11        |
| OR - 24  | West             | 25          |          |        |             |             |
| OR - 25  | West - W ext     | 26          |          |        |             |             |
| OR - 26  | Central          | 40          | 2.65     | 11.00  | 8.35        | 0.16        |
|          |                  |             | 45.65    | 53.15  | 7.50        | 0.14        |
|          |                  |             | 162.00   | 164.00 | 2.00        | <b>0.42</b> |
|          |                  |             | 233.00   | 235.00 | 2.00        | 0.14        |
| OR - 27  | Central - NW ext | 71          | 8.00     | 46.00  | 38.00       | <b>0.72</b> |
|          |                  |             | 54.00    | 54.75  | 0.75        | 0.12        |
|          |                  |             | 58.75    | 62.00  | 3.25        | 0.13        |
|          |                  |             | 72.00    | 130.00 | 58.00       | <b>0.29</b> |
| ORM - 1  | West - E ext     | 49          | 53.60    | 108.40 | 54.80       | <b>0.53</b> |
|          |                  |             | 139.20   | 145.70 | 6.50        | <b>0.35</b> |
| ORM - 2  | East             | 50          | 60.70    | 86.85  | 26.15       | <b>0.55</b> |
| ORM - 3  | West - NW ext    | 21          | 24.00    | 36.00  | 4.00        | <b>0.2</b>  |
|          |                  |             | 148.00   | 152.00 | 4.00        | 0.12        |
| ORM - 4  | Central          |             |          |        |             |             |
| ORM - 5  | East             |             |          |        |             |             |
| OROCU    |                  | 0           |          |        |             |             |
|          |                  | 1167        |          |        |             |             |

\* Core length - true width not determined

**Bold** : >0.20% Sn

Down hole survey data for inclination variations are noted on the graphic drill logs, but the type of survey is not indicated. Drill hole collars were not surveyed. Instead, hole locations were transferred from aerial photographs onto topographic maps, and their coordinates and elevations estimated therefrom (Sr. F. J. Montero Caballero, pers. comm.). Several drill hole collars were noted during the first property visit. From these known points, any remaining drill hole collars (many have been destroyed by the farmers) should be readily located by.

Holes were collared HQ in size and reduced successively to NQ and to BQ as the hole progressed. There are no descriptive drill logs available. Data are presented only as graphic logs complete with core recoveries, unit descriptions (rock type, alteration, mineralization, presence of veins, structure, etc.), and assays. Sample intervals varied in length, crossed alteration, lithological and structural contacts, and seemed to be based more on core recovery than for any geological reason. There are sections of core with sulphide and / or suspected cassiterite mineralization noted that were not sampled. Samples were crushed, pulverized and otherwise prepared for assay at the IGME Litoteca de Sondeos facility in Penarroya-Pueblonuevo, and sent to the IGME laboratory in Madrid for Cu-Pb-Zn-Sn assay by XRF.

### **Mineralogical / Metallurgical Studies**

Work undertaken by **IGME** is described in some detail in two reports published in the Boletín Geológico y Minero (Alvarez Rodriguez and Gomez-Limon, 1988, and Garcia Frutos and Ranz Boquerin, 1989). The summary following is taken from these two sources. Whether or not additional work was completed is not known.

Mineralogical studies were initiated in 1988. Studies included **1)** screening a sample with a 0.284% Sn head grade into 8 fractions, and assaying the fractions for SnO<sub>2</sub>, **2)** separating certain size fractions by heavy liquid separation to produce density fractions and assaying / analyzing for SnO<sub>2</sub>, and major element oxides, and **3)** examining certain products with an electron microscope. Conclusions reached from these studies were;

- The main tin mineral present is cassiterite;
- The size of the liberated cassiterite is small (10 - 20 μ) depending on the percentage liberated;
- Concentration by gravity means would be practically impossible.;
- There would be problems with concentration by floatation means due to large amounts of iron oxides plus Mn and Ti oxides, plus heavy Fe and Zr silicates; and
- Specific solutions for the recovery of ultra fine cassiterite, such as flocculation or agglomeration, need to be explored.

Details regarding these studies are presented in Burns (2010 Appendix IV). Similar but

more extensive mineralogical studies were undertaken in 1989 as well as magnetic separation tests and floatation tests. Details regarding these studies and tests are presented in Burns (2010, Appendix IV). Conclusions determined from the studies and tests were as follows;

- The mineralogical studies by the different techniques tried revealed the concentration problems that would be faced.
- The mid density heavy liquid separation studies indicated the impossibility of pre-concentrating cassiterite by gravimetric methods.
- The liberation size for the cassiterite, demonstrated by various means, is about 10 $\mu$ .
- Magnetic separation as a preliminary stage prior to floatation eliminates only about 53% of the problematic iron oxides.
- The cassiterite in the non magnetic fraction is practically encased by iron oxides not eliminated, and which would impede the floatation reagents.
- The low recoveries of Sn by the two flow sheets indicate the low liberation of cassiterite.
- The low recoveries of cassiterite resulting from poor liberation, make it necessary to study other separation techniques such as higher intensity magnetic separation, column floatation, selective agglomeration, shake tables, etc.

According to Sr. Francisco Jose Montero Caballero (pers. comm.), the government laboratory in Madrid did not have the proper equipment to conduct the test work. Additional test work was planned, but the samples were to have been sent to Italy. Samples were prepared (and are still in storage in Penarroya-Pueblonuevo), but the government cancelled the project prior to shipment.

### **La Grana West and La Grana East Tin Occurrences Area**

All exploration work conducted in the La Grana area was conducted relative to a semi-regular survey grid which covered an area roughly 3.4 km long by 1 km wide, with 29.425 km of lines oriented 020° and spaced +/- 100 to 200 m apart. The grid is a quasi extension from the Oropesa deposit area grid although the lines from one grid do not join those of the other.

### **Soil Geochemical Survey**

No report is available that describes the procedures and results, but there are survey plans with the plotted data. Some 1173 samples were collected at 25 m stations along the lines, and analyzed for Cu, Pb, Zn and Sn. Values ranged from 0 to 1200 ppm Sn, 0 to 535 ppm Cu, 0 to 3130 ppm Pb and 13 to 320 ppm Zn. Anomalous and strongly anomalous Sn

values were considered to be 450 and 634 ppm respectively. The results (**Figure 8**) delineated two centres with higher Sn values (defined by 250 ppm Sn contour) some 1.3 km apart. At the **La Grana West** zone there is a moderate to strong Cu and a strong Pb correlation with Sn, while at the **La Grana East** zone there is a weak Cu and strong Pb association.

### Gravity Survey

A gravity survey was completed over an approximate 3 km x 6 km area on lines spaced at either ~500 or ~1000 m intervals and oriented 020°. Readings were also taken along some of the roads. No report is available, only plans of the Bouger, Regional and Residual data. Residual gravity anomalies M-4, 5, 6 and 7 are packed within an area measuring roughly 2 km x 0.7 km. The **West** zone lies within the western tail of gravity anomaly M-4, and the **East** zone coincides with anomaly M-5.

### Core Drilling

Sixteen (16) core holes with a cumulative length of 3420.0 m were drilled between 1987 and 1990 to test the two La Grana occurrences (**Table 4**). Hole locations are shown on the Sn geochemistry base map **Figure 8**. There is no report available that describes the program. Holes 1 to 5 tested **La Grana West**, and 6 to 16 **La Grana East**. Significant intercepts using a 0.10 % Sn cut-off are presented in **Table 5**. Results are discussed in the section titled “**MINERALIZATION**”.

Down hole survey data for inclination variations are noted on the graphic drill logs, but the type of survey is not indicated. Drill hole collars were not surveyed. Instead, hole locations were transferred from aerial photographs onto topographic maps, and their coordinates and elevations estimated therefrom (Sr. F. J. Montero Caballero, pers. comm.). Several drill hole collar locations were noted during the property visits, and the locations were recorded using a hand held GPS unit. The coordinates so recorded cross check with those stated by IGME.

Holes were commenced HQ in size and reduced successively to NQ and to BQ as the hole progressed. There are no descriptive drill logs available. Data are presented only as graphic logs complete with core recoveries, unit descriptions (rock type, alteration, mineralization, presence of veins, structure, etc.), and assays. Sample interval varied in length, crossed alteration, lithological and structural contacts, and seemed to be based more on core recovery than for any geological reason. There are sections with sulphide and / or suspected cassiterite mineralization noted on the graphic logs that were not sampled. Samples were crushed, pulverized and otherwise prepared for assay at the IGME Litoteca de Sondeos facility in Penarroja-Pueblonuevo, and sent to the IGME laboratory in Madrid for Cu-Pb-Zn-Sn assay by XRF.

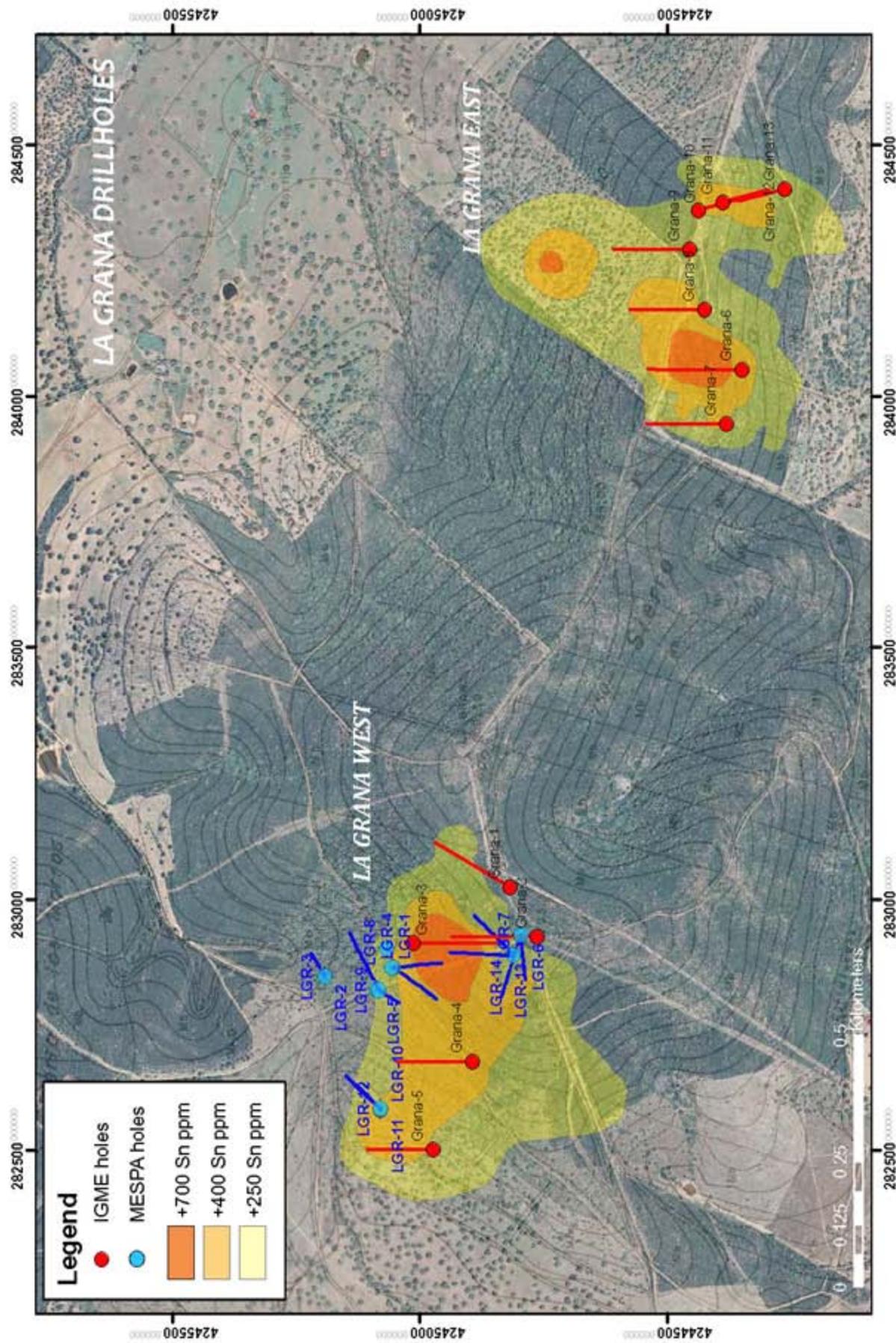
**TABLE 4**  
**IGME : La Grana Tin Occurrences Drill Hole Data**

| Hole No.          | Date Drilled | Azimuth (mag) | Dip  | Length (m) | x Coordinate* | y Coordinate | Elevation* (m) | Anomaly Tested |
|-------------------|--------------|---------------|------|------------|---------------|--------------|----------------|----------------|
| Grana - 1         | 1987 / 88    | 30            | 50 N | 272.50     | 283023        | 4244820      | 792            | West           |
| Grana - 2         | 1988         | 360           | 50 N | 266.35     | 282925        | 4244766      | 804            | West           |
| Grana - 3         | 1988         | 180           | 50 S | 265.40     | 282912        | 4245017      | 741            | West           |
| Grana - 4         | 1988         | 360           | 50 N | 237.80     | 282677        | 4244897      | 731            | West           |
| Grana - 5         | 1988 / 89    | 360           | 50 N | 207.55     | 282503        | 4244976      | 685            | West           |
| Grana - 6         | 1988         | 360           | 50 N | 299.60     | 284053        | 4244350      | 719            | East           |
| Grana - 7         | 1988         | 360           | 50 N | 253.70     | 283946        | 4244381      | 731            | East           |
| Grana - 8         | 1988         | 360           | 50 N | 236.65     | 284171        | 4244426      | 743            | East           |
| Grana - 9         | 1989         | 360           | 50 N | 242.95     | 284291        | 4244455      | 751            | East           |
| Grana - 10        | 1989         | 165           | 60 S | 238.65     | 284369        | 4244438      | 749            | East           |
| Grana - 11        | 1990         | 165           | 60 S | 191.65     | 284385        | 4244388      | 749            | East           |
| Grana - 12        | 1990         |               | 90   | 91.00      | 284412        | 4244264      | 698            | East           |
| Grana - 13        | 1990         | 345           | 55 N | 167.40     | 282412        | 4244264      | 698            | East           |
| Grana - 14        | 1990         | 95            | 50 E | 160.40     | 283988        | 4244542      | 776            | East           |
| Grana - 15        | 1990         | 95            | 50 E | 162.40     | 284116        | 4244626      | 745            | East           |
| Grana - 16        | 1990         | 304           | 50 N | 126.60     | 284546        | 4244482      | 728            | East           |
| <b>IGME Total</b> |              |               |      |            |               |              | <b>3420.00</b> |                |

\* European 1950 datum, zone 30 S

1 Measured with hand held GPS

2 Digitized from IGME map



Projection UTM  
 European Datum 1950  
 Zone 30 S

**FIGURE 8**  
 LA GRANA PROJECT: La Grana Tin Area  
 Location: Cordoba province, Spain  
 Date : 10-08-2011

**Table 5**  
**IGME : La Grana Tin Occurrences Drill Hole Assay Intercepts (0.10% Sn cut-off)**

| Hole No.   | Zone   | # of Assays | From (m) | To (m) | Length (m)* | % Sn        |
|------------|--------|-------------|----------|--------|-------------|-------------|
| Grana - 1  | West   | 21          | 58.35    | 60.35  | 2.00        | <b>0.24</b> |
| Grana - 2  |        | 43          | 57.00    | 61.00  | 4.00        | 0.2         |
|            |        |             | 87.00    | 97.00  | 10.00       | 0.2         |
|            |        |             | 101.00   | 103.00 | 2.00        | 0.15        |
|            |        |             | 128.00   | 130.00 | 2.00        | 0.12        |
| Grana - 3  | West   | 34          | 27.00    | 29.00  | 2.00        | <b>0.32</b> |
|            |        |             | 122.00   | 124.00 | 2.00        | 0.1         |
| Grana -4   | West   | 22          | 79.25    | 81.25  | 2.00        | 0.13        |
| Grana - 5  | West   | 3           |          |        |             |             |
| Grana - 6  | East   | 70          | 8.00     | 12.00  | 4.00        | 0.17        |
| Grana - 7  | East   | 31          | 83.00    | 85.00  | 2.00        | 0.1         |
| Grana - 8  | East   | 21          | 63.00    | 65.00  | 2.00        | <b>0.53</b> |
| Grana - 9  | East   | 12          | 160.15   | 162.15 | 2.00        | 0.12        |
| Grana - 10 | East   | 49          | 65.00    | 67.00  | 2.00        | 0.19        |
|            |        |             | 144.00   | 148.00 | 4.00        | 0.12        |
|            |        |             | 172.00   | 178.00 | 6.00        | <b>4.03</b> |
|            |        |             | 192.00   | 194.00 | 2.00        | <b>2.1</b>  |
|            |        |             | 222.00   | 224.00 | 2.00        | <b>0.36</b> |
|            |        |             |          |        |             |             |
| Grana - 11 | East   | 48          | 12.00    | 14.00  | 2.00        | 0.1         |
|            |        |             | 20.00    | 22.00  | 2.00        | <b>0.26</b> |
|            |        |             | 151.00   | 153.00 | 2.00        | 0.1         |
| Grana - 12 | East   | 10          |          |        |             |             |
| Grana - 13 |        | 40          | 54.00    | 56.00  | 2.00        | <b>1.64</b> |
|            |        |             | 60.00    | 62.00  | 2.00        | 0.13        |
|            |        |             | 98.00    | 100.00 | 2.00        | <b>0.43</b> |
|            | 126.00 |             | 128.00   | 2.00   | 0.18        |             |
| Grana - 14 |        | 13          | 148.00   | 150.00 | 2.00        | 0.3         |
| Grana - 15 |        | 82          | 121.00   | 123.00 | 2.00        | 0.14        |
| Grana - 16 |        | <u>29</u>   |          |        |             |             |
|            |        | <u>528</u>  |          |        |             |             |

\* Core length - true width not determined

**Bold:** >0.20% Sn

## GEOLOGICAL SETTING AND MINERALIZATION

### Regional Geology (Summarized from Tornos, 2004a, and 2004b)

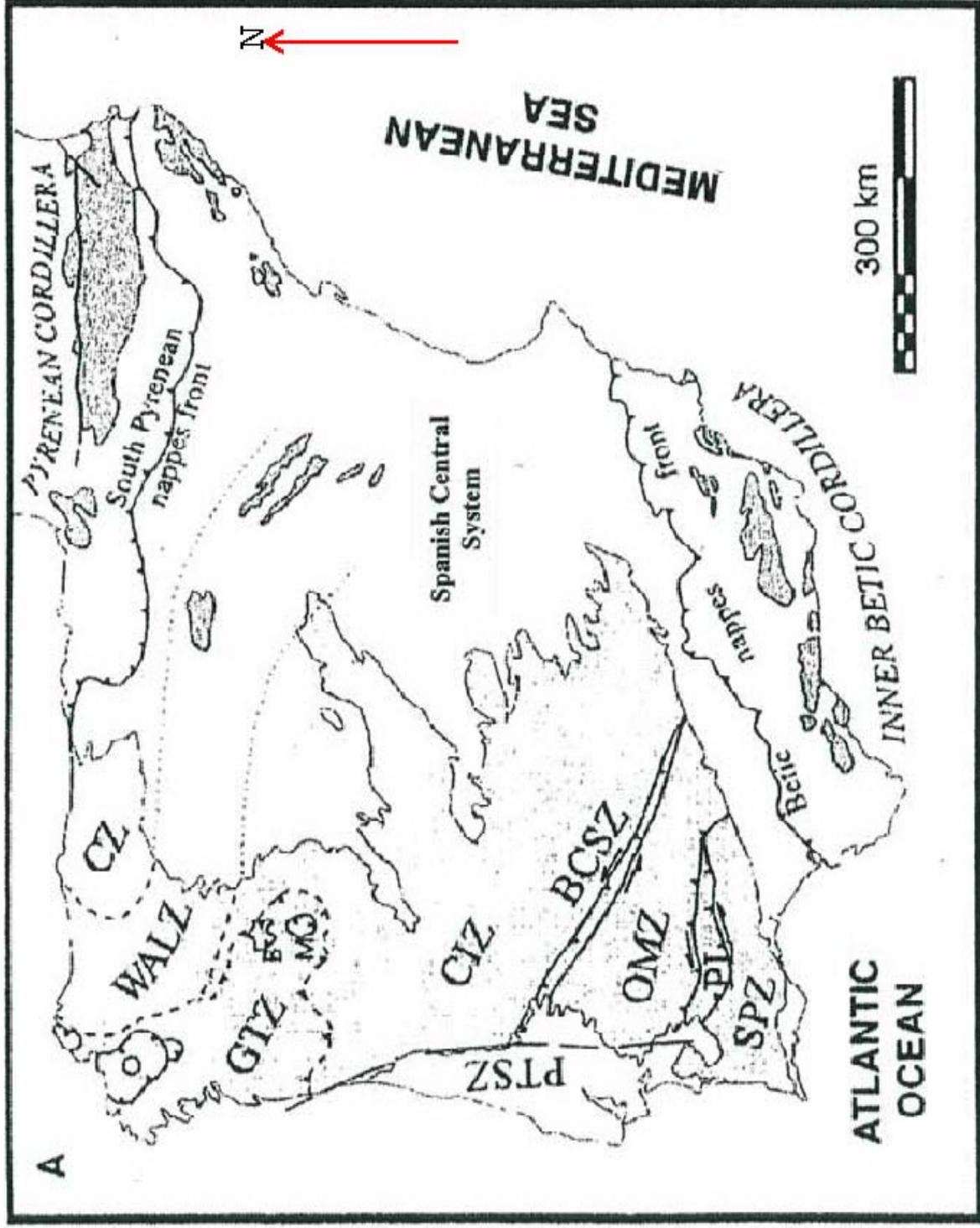
The Hercynian Orogenic Belt (HOB) occupies the approximate western third of the Iberian peninsula in Spain and Portugal. It is bounded to the south by the Inner Betic Cordillera and the east by the Spanish Central System (**Figure 9**). The Hercynian Orogenic Belt has been subdivided into several geologically distinct zones (Leistel, et al., 1998); these are, from north to south, Cantabrian (CZ), West Asturian- Leonese (WALZ), Central-Iberian (CIZ), Ossa-Morena (OMZ), and South Portugese (SPZ).

The Ossa-Morena Zone is located in the south central portion of the Iberian peninsula, trends WNW/ESE and covers an area roughly 240 km long by 120 km wide. Its boundary with the Central Iberian Zone to the north is the Pedroches batholith, while to the south the South Iberian shear zone (a major suture) constitutes the boundary with the South Portugese Zone. The OMZ is one of the most complex terranes of the HOB, and consists of:

- ▷ heterogenous, dismembered pre-Cadomian (Precambrian) sequences that contain high-grade metamorphic rocks and a thick siliciclastic sequence deposited in a passive margin;
- ▷ a synorogenic Cadomian unit that contains backarc to intraarc sequences of late Neoproterozoic-Early Cambrian age;
- ▷ a volcano-sedimentary unit formed during an intracontinental rift phase of early Paleozoic age;
- ▷ a passive margin sequence (Ordovician-Early Devonian); and
- ▷ syn-Variscan (lower Carboniferous) sedimentary rocks that were deposited in restricted basins.

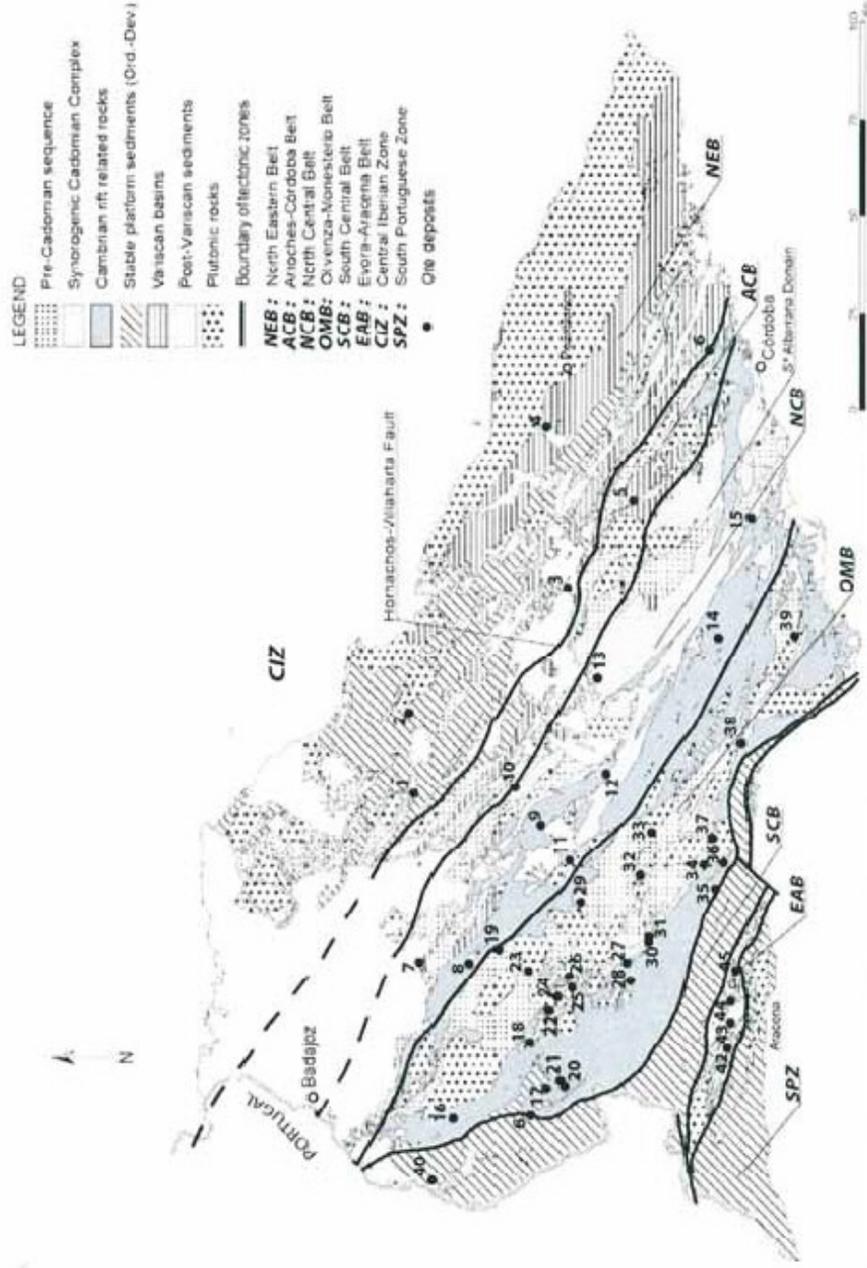
The geotectonic evolution of the OMZ also involves the intrusion of large volumes of igneous rocks belonging to three magmatic events: the Cadmonian orogenic cycle, the Variscan orogenic cycle and an intermediate extensional phase of early Paleozoic age.

The Ossa-Morena Zone has been subdivided into eight WNW/ESE “ore” belts (**Figure 10**). From north to south these belts are **1)** North Eastern Belt (in which the Oropesa property lies), **2)** Arronches-Cordoba Belt, **3)** North Central Belt, **4)** Olivenza-Monesterio Belt, **5)** South Central Belt, **6)** Evora-Aracena Belt, **7)** Cristovao -Beja-Serpa Belt and **8)** Beja-Acebuches Ophiolite Complex . [The later two only exist in Portugal in the very southwestern portion of the Ossa-



- CZ:** CANTABRIAN ZONE
  - WALZ:** WEST ASTURIAN ZONE
  - CIZ:** CENTRAL IBERIAN ZONE
  - OMZ:** OSSA-MORENA ZONE
  - SPZ:** SOUTH PORTUGUESE ZONE
- (From Leistel et al., 1998)

**Figure 9**  
 Geological Zones  
 of the  
 Iberian Peninsula



**Figure 10**

Synthetic geologic map of the Ossa-Morena Zone in Spain showing the metallogenic belts and the location of the major deposits and districts described in the text. Deposits and occurrences: 1.- Puebla de la Reina (Cu-Zn-Pb); 2.- San Nicolás (W-(Sn-Bi)); 3.- Oropesa (Sn); 4.- El Soldado (Pb-(Zn-Ag)); 5.- Nava Paredón (Zn-Cu-Pb); 6.- Los Arenales-Cerro Muriano (bi-fl-F-(Zn-Pb-Ag)); 7.- Santa Marta (Pb-Zn-Ag); 8.- Alfredo (Fe); 9.- Mariquita-Sultana (Hg-Cu-Pb-Ba); 10.- Retin (Zn-Pt); 11.- Calzadilla de los Barros (Cr); 12.- Llerena (barite); 13.- Azuaga-Berlanga ore field (Pb-(Ag-Zn)); 14.- Cerro del Hierro (Fe); 15.- Sierra Albarana (U-(REE)); 16.- Las Herrerías (Fe-Cu); 17.- Oliva-Zahinos (Mn); 18.- La Bóveda (Fe); 19.- Abundancia (Cu); 20.- Mari Juli (W-(Bi-Au)); 21.- Virgen de Gracia (W); 22.- La Bilbaina (Fe-Cu-Au); 23.- Monchi (Fe-(Co-REE-U)); 24.- Colmenar-San Guillermo-Santa Justa (Fe-Cu); 25.- Bismark (Fe); 26.- La Bernona (Fe); 27.- La Valera (Fe); 28.- Los Eloyos (Fe); 29.- La Hinchona (Cu); 30.- Chocolatero (Au); 31.- Guíjarro (Au); 32.- Monesterio (Cabra Alta) (U-(Ni-Ce)); 33.- Pallarés (Cu-Ba); 34.- Sultana (Cu-(Au-Bi)); 35.- Cala (Fe-Cu); 36.- Teuler (Fe); 37.- Agnabianca (Ni-(Cu-PGE)); 38.- Cazalla de la Sierra (Fe); 39.- Constantina-Huézmar (Au); 40.- Novillero (Fe-Cu); 41.- Villanueva de Ffresno (Cabra Baja) (U-REE); 42.- Aroche (wollastonite) 43.- Maria Luisa (Cu-Zn-(Pb)); 44.- Fuenteherriados (Zn-Pb-Ag); 45.- Araccena (Zn-Pb-Ag-Ba).

Morena Zone.] Numerous major structural features (such as the Peraleda Fault, Azuaga Fault, Hornachos Fault, Malcocinado Fault, and the Monesterio Thrust) also trend WNW /ESE across the region, and, at least in places, form the boundaries of the belts.

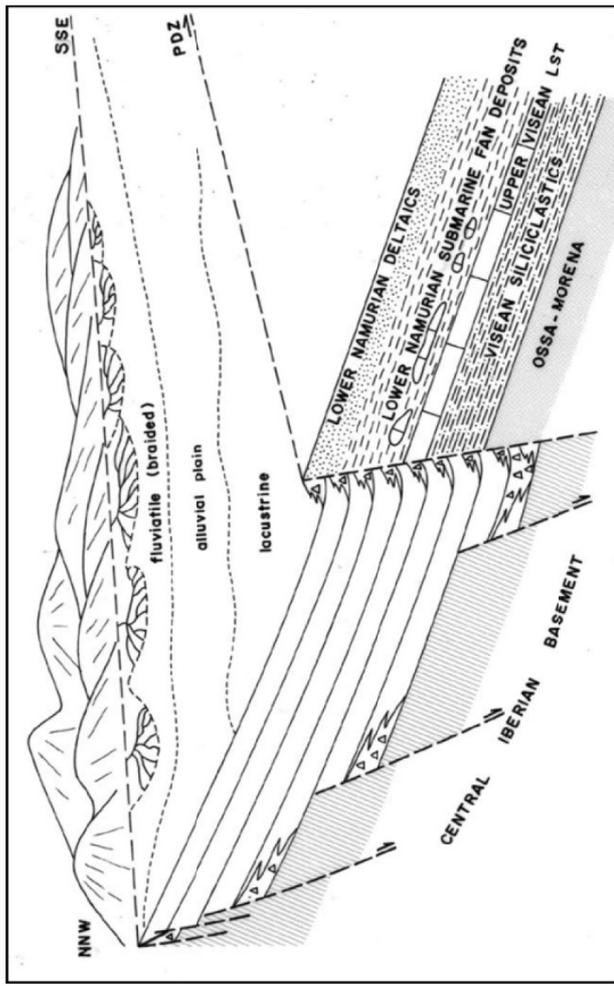
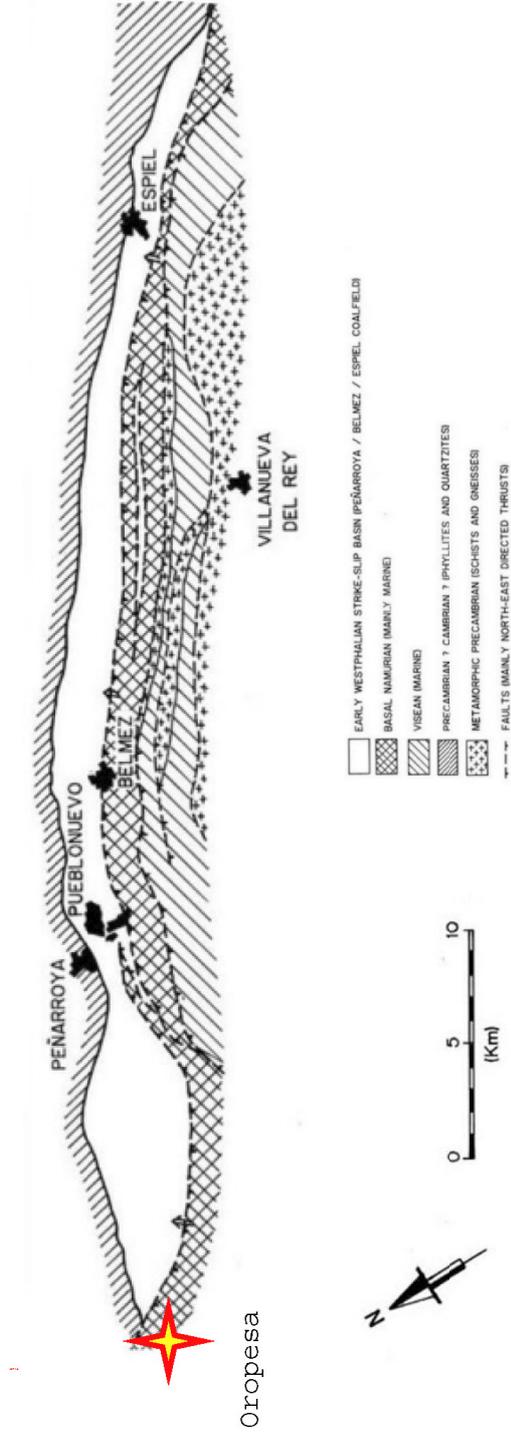
Of the zones within the Hercynian Orogenic Belt, the Ossa-Morena Zone displays the greatest variety of mineralization types, as well as the largest number of mineral deposits and occurrences (>700). Commodities include iron, lead-zinc, copper, gold, silver, antimony, nickel, manganese, tungsten, tin, mercury, barite, uranium and coal. These deposits formed by very different processes in distinct geological districts, and over a range of geological time. Deposit types (and metals) include deep epi- to mesothermal veins (W, Bi, Sn, Cu, Pb, Zn, Ag, Hg, Au), stratiform exhalative (Cu, Pb, Zn, Ag, Au), porphyry (Cu), pegmatites (U, REE), skarn (Zn, Pb, Cu, Fe), replacement (Sn) and magmatic (Ni, Cu).

Within the North East belt (in which the Oropesa property occurs), the geology is characterized by a Paleozoic sedimentary sequence with Central Iberian Zone affinities which overlies a Proterozoic sequence typical of the Ossa-Morena Zone. Shallow marine Carboniferous synorogenic basins are abundant in the area. A variety of mineral deposits occur, mainly hydrothermal veins related to the Pedroches batholith which occurs approximately 15 km north of the property.

#### **Local and Property Geology** (summarized from Delgado Quesada, 1984 except as noted)

The Oropesa property lies towards the west-northwestern extremity of the Penarroya-Belmez-Espiel basin (**Figure 10B**). This basin, which formed in a graben during the Mid to Late Carboniferous, is some 50 km long and 0.7 to 1.2 km wide (Wagner, 2004). The basin is bounded to the north by a normal fault and to the south by a thrust fault which has obliterated the original basinal margin.

In general, a south facing, south dipping, Devonian to Upper Carboniferous sequence of sedimentary rocks underlies the property (**Figure 6**). The stratigraphic sequence, however, lacks a marker horizon from which the relative position of the rock units may be placed. The northern portion (Sierra de la Grana) is dominated by Devonian age quartzite with minor slate. The quartzite is generally fine to medium grained, light grey to white and massive, while the interbedded slate is cream coloured. All strike NNW and dip from 50° to 75° SW. [Note,



Additional sympathetic, sub-parallel faults to the basin boundary faults would have been formed with any re-activation of the basin boundary faults.

FIGURE 10B

(from Wagner, 2004)

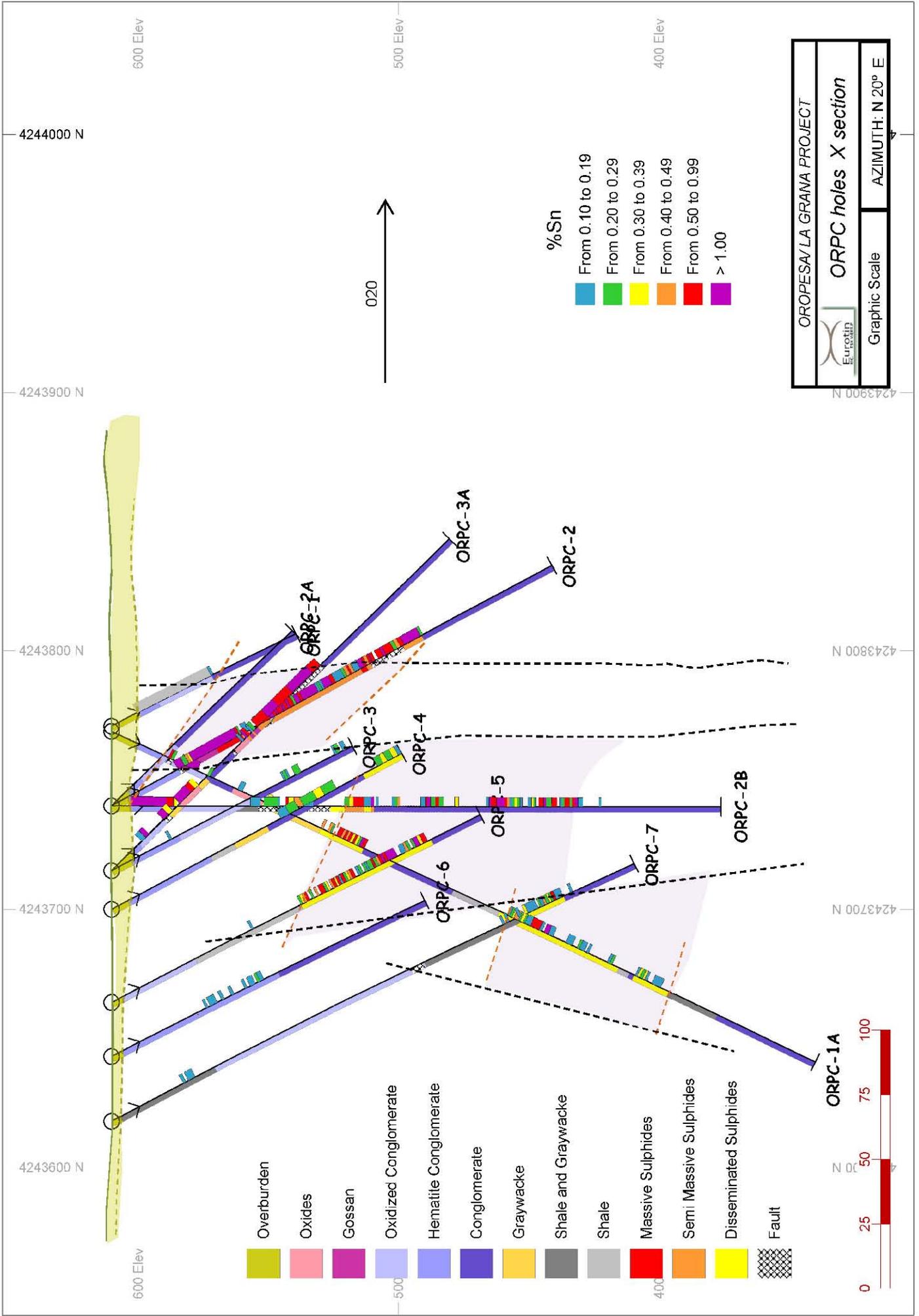
geological observations by MESPA personnel in the course of the 2010 drill campaign regarding lithology indicate that, at least locally, lithological dips may be to the north (**Figure 11**.)] The contact with the younger Upper Carboniferous rocks has not been observed, but is believed to be the normal fault which defines the northern edge of the basin.

The rocks of the Upper Carboniferous have been sub-divided into two units. Conglomerate, arenite and shale (plus minor metavolcanic, ash and epiclastic rocks) constitute the rock types of the lower **carbonatized detrital unit (UDC)**. The conglomerate is volumetrically the largest component of the UDC. In it, clast supported, sub-angular to rounded shale (dominant), arenite (minor) and quartzite (rare) pebbles and cobbles to ~5 cm are set in a well cemented arenaceous matrix. Locally, thin beds of arenite with minor pebble content do occur. P. Miller (pers. comm.) believes that the conglomerate is a glacial outwash product deposited in a channel way that was pre-existing prior to glaciation or formed as a result of glaciation during the Permian. A mix of impure sandstone and greywacke comprise the arenite portion of the UDC. Taylor (May, 2011) noted that the sandstones are closely packed granular rocks (100 - 200 micron grain size), may be quite soft and contain considerable clay (possibly due to as a result of altered feldspar) and may locally display graded bedding. The rocks are relatively undeformed with no significant cleavage development and are unmetamorphosed. Fossils in these rocks indicate that they were deposited on a submarine platform. The shale portion of the UDC varies in colour from dark green to cream to reddish and is moderately to well bedded.

Overlying the UDC to the south is the **Culm facies unit (UFC)**. Rock types comprising the UFC are primarily shale and arenite with lesser interbedded conglomerate, porphyritic andesite and limestone.

Granite of unknown age is present along the southern property boundary underlying the Sierra de las Cabras. Where noted during the 2008 property visit, the rock is foliated at  $110^{\circ} / 65^{\circ}$  S. Whether this granite is the source of or otherwise related to the tin mineralization is not known. The tin assay value of 83 ppm for a sample collected by the Author suggests that the granite could well be the source of, or otherwise related to the source of the tin mineralization.

Although overburden cover, as exposed in trenches, is generally less than 1 m thick, there is less than 10% outcrop exposure over the property and area. In the immediate area of the Oropesa



**FIGURE 11**

tin occurrence, the surface is littered with quartzite cobbles from the Devonian unit to the north. Cobbles increase in size and amount towards the contact with the Devonian units. A fluvial soil has been deposited along the Arroyo Majavacas which runs west to east in the southern sector of the property.

The structural geology of the property and area is complex and poorly understood. Mapped / interpreted NE and NNE striking faults disrupt the stratigraphy in and about the property. Those of the NE set are interpreted to be mainly of a sinistral nature, while those of the NNE set are dextral. Other fault sets most probably exist; an example would be a NNW set following the direction of the arroyos that cut through the property. The fault pattern on government 1:50,000 scale regional geology map sheets 879 and 857 suggest that the Sierra de la Grana is a fault block. Since the lithologies underlying La Grana are mapped as older than the lithologies at lower elevations, then a major NNW/SSE fault along the southern face of the La Grana hill has been interpreted. Whether this fault is a normal or thrust fault has not been determined although a thrust fault is suspected. Vertical movement on the fault would be north side up relative to the south but the amount of displacement in the vertical sense and in the horizontal sense (if any) remain to be determined. Whether or not any of the interpreted faults are related to an assumed underlying granite intrusion (the source for the tin mineralization) also remains to be determined. The NNE /SSW trending highly anomalous tin geochemical areas at Sierra de la Grana strongly suggest an association between structure and mineralization.

Faults of undetermined orientation and movement have been cut in many MESPA drill holes displacing mineralization. These faults along with the lack of any marker horizons complicate the geological interpretation of the property.

## **Mineralization**

### **General**

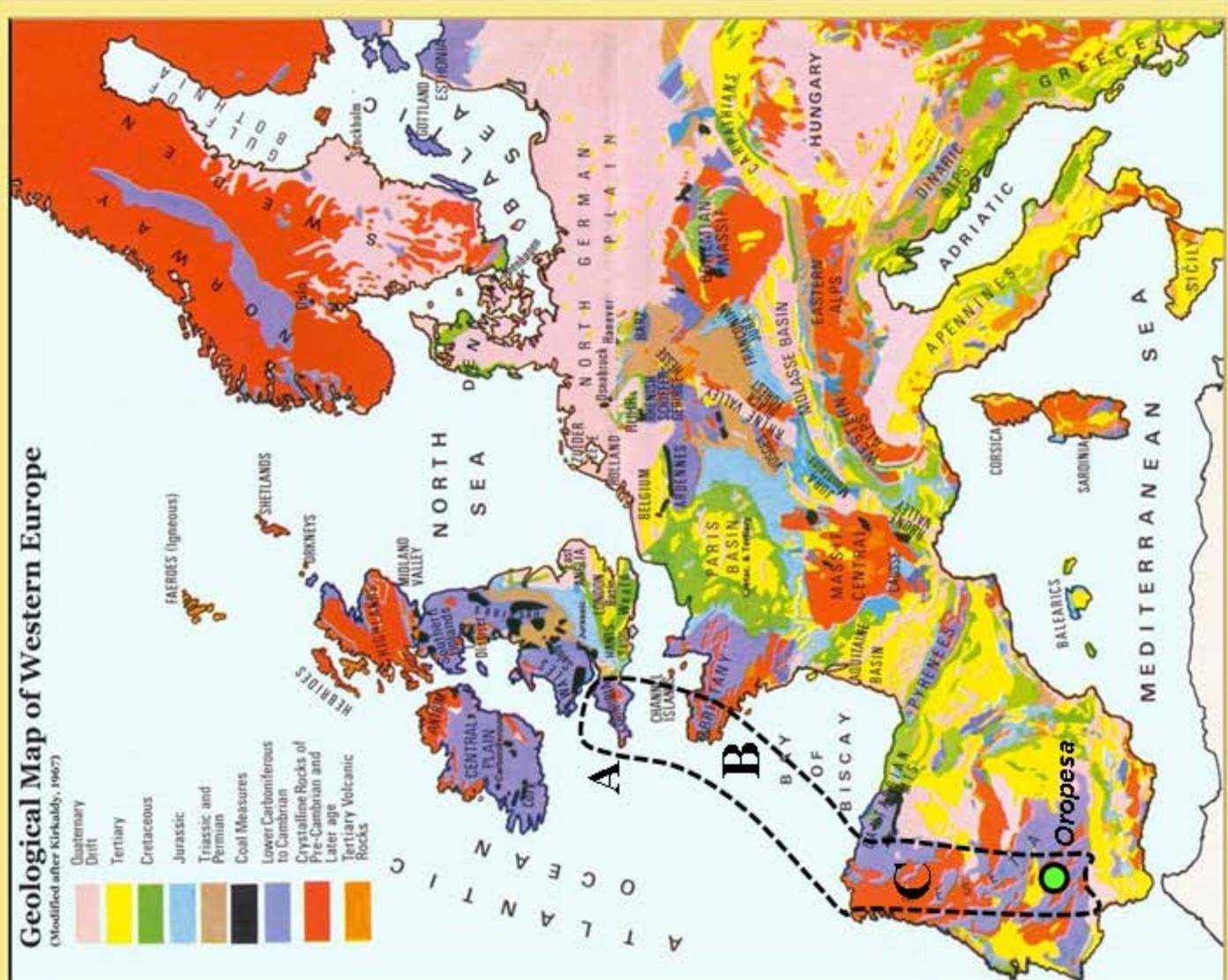
The Oropesa property lies within the “West European Tin Belt”, an approximate 200 km wide, northerly trending area that cuts across western Spain and northeastern Portugal, through to Brittany (in western France) and on the Cornwall / Devon (southwestern UK) within which several past producing tin mines occur (**Figure 12**). On the property, three mineralized areas have been identified to date - the Oropesa tin deposit, and the La Grana West and La Grana East tin

# Tin Belts of Western Europe

The tin belts\* of Western Europe consist of many hundreds of deposits, mostly around 285-295 million years old. Some of these deposits were being mined 2-3 thousands years ago.

- \* Tin Belts of Western Europe
- A. Cornubian (Cornwall/Devon)
  - B. Brittany
  - C. West Iberian.

**FIGURE 12**



occurrences. All are located a minimum of 1 km from any property boundary (**Figure 2**).

### **Oropesa**

The greater **Oropesa** Sn area, as originally defined by IGME from the results of a soil geochemical survey, measures some 2000 m long in a WNW / ESE direction by 500 to 1000 m wide (**Figure 7**). A central core area measures approximately 1200 m long, is between 100 and 200 m wide, and displays three distinct internal zones (East, Central and West) with higher Sn values. Tin mineralization has not been observed in the few outcrops within the anomalous area, and the IGME trenches have been back filled. Between 1982 and 1990 IGME tested the geochemical anomalies with 7,369.15 m in 33 core holes (see the section titled “**HISTORY**”). From March to November, 2010 MESPA further tested the anomalies with an additional 2035 m in 12 core holes (reported upon in Burns, January 2011), and have since added 45 more holes (9,751.65 m) which are discussed latter in this report in the section titled “**DRILLING**”. Details regarding the Oropesa tin mineralization follow, and have been summarized from reports of mineralogical studies initiated by IGME and MESPA, observations and interpretation by MESPA personnel when reviewing the IGME data and drill core or while logging the MESPA drill core, observations by R. Taylor (a recognized international expert on tin deposits), as well as a perusal of the core sample assay data.

- ▷ The paragenetic sequence is complex with several stages of structural activation / reactivation each accompanied by a different hydrothermal fluid (Taylor, May 2011). The stages identified by Taylor are listed below and expanded upon in **Table 6**.

|       |  |
|-------|--|
| Early | 1 Quartz - arsenopyrite - cassiterite            |
|       | 2 Pyrite   |
|       | 3 Mixed sulphide                                 |
|       | 4 Pyrrhotite*                                    |
|       | 5 Kaolinite                                      |
|       | 6 Leaching - oxidation enrichment                |
| Late  | 7 Quartz veins                                   |
|       | * Timing unclear - suspected post mixed sulphide |

- ▶ In the quartz-arsenopyrite-cassiterite stage silicification is widespread. Quartz occurs in veins (up to the metre scale), in veinlets 1-4mm scale and in anastomizing vein breccias. The arsenopyrite content is highly variable. Cassiterite is not generally visible to the eye; grain size varies from 2 to 400 microns, but averages 20- 50 microns. Both cassiterite and

Table 6 : Hydrothermal Stages (Modified from Taylor, May 2011 and July 2011)

| Stage  | Infill   | Alteration   | Structure   | Comments  |
|--|--|--|---|---|
| 1. Quartz-arsenopyrite-cassiterite             | Quartz, Arsenopyrite, Cassiterite, Muscovite   | Quartz (silicification) Arsenopyrite - spot alteration of host rock by which arsenopyrite (and possibly cassiterite) replace argillaceous and / or sericitic components. | Veins (locally metre scale) Veinlets - cracks (1-4mm scale) Anastomizing vein breccia Disseminated                                  | Widespread silicification. Quartz (early 1.0 - 2.0 mm crystals, late colloform) Cassiterite not generally visible to the eye, and its presence as an alteration product unclear. Grain size varies from 2 to 400 microns, average 20- 50 microns. Arsenopyrite content highly variable. This stage tends to be concealed by the visually dominant pyrite stage. |
| 2. Pyrite                                      | Pyrite   | Pyrite - massive - semimassive to pyrite spots (disseminated)  | Veins Veinlets - cracks Anastomizing vein breccia Disseminated  | Veins to 3.0 cm accompanied by major pyrite alteration. Any cassiterite in this stage is probably as inclusions from the previous stage. Pyrite - crystals to 2mm.  |
| 3. Mixed sulphide                              | Pyrite, Marcasite, Sphalerite, Carbonate (siderite), Quartz +/- (minor to rare) Arsenopyrite, Galena, Stannite, Chalcopyrite, Pyrrhotite | Carbonate, pyrite, sphalerite spotting.  | Veins - small (1-2cm scale) Veinlets - cracks (1.0 mm scale; continuous - discontinuous)  | Carbonate alteration oxidizes to a general orange colour. Stannite rare to minor.   |
| 4. Pyrrhotite                                  | Pyrrhotite, Chlorite, Stannite   | Pyrrhotite +/- chlorite, marcasite   | Veinlets - alteration spots   | Minor. Timing unclear. Suspect variety of Stage 3, however there is still a possibility of another late marcasite / pyrite only stage.  |
| 5. Kaolinite                                   | Kaolinite  |  | Veinlet   | Kaolinite may contain bornite and possibly pyrite crystals.   |
| 6. Leaching - oxidation - secondary enrichment | Minor scorodite (from arsenopyrite breakdown). Minor clay.   | Minor scorodite in oxidation zones (replacing arsenopyrite). Minor covellite / chalcocite as supergene enrichment (presumably replacing sulphides). Clay.                | Vugs developed along cracks, and via leaching of the previous carbonate stage. Development of argillic alteration as clay spotting. | It is probable that all of these effects are related to surficial acid fluid development at selected points in the weathering profile; however a late stage acid alteration effect relative to the ascending main hydrothermal system has not been totally eliminated.  |
| 7. Quartz veins                                | White quartz +/- carbonate.  | None   | Veins   | Depending upon the status of the various components of Stage 5, this is obviously late in the system and precedes current weathering effects. It is considered to be substantially later than the main mineralization cycle. Possibly associated with cross fault development?  |

arsenopyrite occur in the veins and veinlets and frequently as spot alteration of host rock by which the arsenopyrite replace argillaceous and / or sericite components of the host rock. This stage tends to be concealed by the visually dominant pyrite stage that followed, and which may be semi massive or massive in character.

- ▶ All of the mineralized structures are brittle in character, suggesting formation at relatively high crustal levels (Taylor, May 2011).
- ▶ The main tin bearing intercepts are combinations of infilling (mineralization)/alteration representing multi-stranded fault/breccia zones with intervening brittle fracture crackle networks. The initial structures have been reactivated 3-5 times to form relatively wide zones of complex overprinting involving at least one early cassiterite bearing stage. The breccia - veins are accompanied by the multiple brittle fractures which may splay out into the wall rocks (probably predominately layed parallel) to form subsidiary zones which are alteration dominant (Taylor, May 2011).
- ▶ It is probable that the tin bearing structures will have considerable strike and depth extension (Taylor, May 2011).
- ▶ MESPA has concluded from a) the lack of mineralized quartz veins, b) the occurrence of the tin mineralization within zones of intense hydrothermal alteration, and c) the age of most tin mineralization in western Europe is Upper Carboniferous, that the mineralizing event occurred while the Carboniferous rocks of the basin were perhaps only semi consolidated (P. Miller, pers. comm).
- ▶ Within the oxidized upper portion of the deposit and in the transition to fresh rock the almost total absence of sulphides and the presence of iron and manganese oxide minerals in the fractures has led MESPA to hypothesise that sulphide minerals have been destroyed by weathering thus freeing the encapsulated cassiterite mineralization which would then be susceptible to loss by the circulating drill water (P. Miller, pers. comm.).
- ▶ Tin mineralization has been intersected in drill holes over a strike length > 1300 m (**Figure 7 & Table 7**). Based upon multiple intercepts in several holes there appear to be multiple mineralized or possibly sub structures within a major structure, however insufficient cross sectional drilling has been completed to confirm this hypothesis.
- ▶ MESPA geologists have noted that the horizontal extent of the mineralized structure corresponds very well with IP chargeability anomalies defined by IGME in the 1980s.
- ▶ Tin mineralization is confined to the impure sandstone/greywacke and conglomerate rock units. Values appear to be more consistent in the sandstone / greywacke. The shale is, at best, poorly mineralized, mainly in very thin joints.
- ▶ The primary tin mineral is cassiterite. Stannite is rare, and probably occurs in the mixed sulphide stage (Taylor, May 2011).
- ▶ Semi massive and massive sulphide mineralization of epithermal origin have been observed in several MESPA drill holes. Chalcopyrite and sphalerite are locally prevalent with this style of sulphide mineralization. Individual assay values for copper and zinc values range to 4.57 % and 11.85 % respectively. MESPA geologists have observed a direct correlation between high sulphide content in the core and high tin assays (V. Guerrero, pers. comm.).

**TABLE 7**  
**MESPA : Oropesa Tin Deposit Drill Hole Assay Intercepts (0.20% Sn cut-off)**

**Intercept parameters : Minimum of 3 m length or 3 samples**

**\*\*\* Intercept (one or more assays ) present above cut-off, but does not meet criteria above.**

**Maximum of 3 m or 3 samples below cut-off between intercepts**

| Hole No.   | # of Assays | From (m) | To (m) | Length (m)* | % Sn | Comments |
|--|-------------|----------|--------|-------------|------|----------|
| ORP-1  | 138         | 64.2     | 84.8   | 20.6        | 0.27 |          |
|  |             | 107.5    | 129.2  | 21.7        | 0.35 |          |
| ORP-2  | 180         | 1.0      | 10.0   | 9.0         | 0.41 |          |
|  |             | 14.0     | 44.0   | 30.0        | 0.48 |          |
|  |             | 123.3    | 136.0  | 12.7        | 0.27 |          |
|  |             | 147.7    | 155.0  | 7.3         | 0.59 |          |
| ORP-3  | 126         | 168.8    | 174.7  | 5.9         | 0.23 |          |
| ORP-4  | 100         | 122.2    | 144.7  | 22.5        | 0.73 |          |
| ORP-5  | 0           |          |        |             |      | NSI      |
| ORPC-1   | 37          |          |        |             |      | NSI      |
| ORPC-2   | 110         | 29.3     | 57.3   | 28.0        | 4.28 |          |
|  |             | 66.1     | 91.1   | 25.0        | 1.17 |          |
|  |             | 94.0     | 98.8   | 4.8         | 1.03 |          |
|  |             | 102.7    | 136.8  | 34.1        | 0.83 |          |
| ORPC-3   | 94          |          |        |             | ***  | NSI      |
| ORPC-4   | 81          | 78.8     | 99.5   | 20.7        | 0.21 |          |
|  |             | 118.0    | 127.2  | 9.2         | 0.30 |          |
| ORPC-5   | 106         | 88.3     | 138.65 | 55.35       | 0.59 |          |
| ORPC-6   | 65          |          |        |             |      | NSI      |
| ORPC-7   | 94          | 188.7    | 193.8  | 5.1         | 0.36 |          |
|  | 1131        |          |        |             |      |          |
| The above holes were reported in Burns, January 2011 |             |          |        |             |      |          |
| ORPC-9   | 28          |          |        |             |      | NSI      |
| ORPC-A   | 68          | 96.70    | 111.50 | 14.80       | 0.84 |          |
|  |             | 120.80   | 130.70 | 9.90        | 0.97 |          |
| ORPC-1A  | 161         | 25.10    | 37.70  | 12.60       | 1.21 |          |
|  |             | 92.20    | 111.60 | 19.40       | 0.44 |          |
|  |             | 175.80   | 192.80 | 17.00       | 0.49 |          |
|  |             | 232.55   | 235.7  | 3.15        | 0.31 |          |
| ORPC-2A  | 43          |          |        |             | ***  | NSI      |

**TABLE 7**  
**MESPA : Oropesa Tin Deposit Drill Hole Assay Intercepts (0.20% Sn cut-off)**

**Intercept parameters : Minimum of 3 m length or 3 samples**

**\*\*\* Intercept (one or more assays ) present above cut-off, but does not meet criteria above.**

**Maximum of 3 m or 3 samples below cut-off between intercepts**

| Hole No.  | # of Assays | From (m) | To (m) | Length (m)* | % Sn | Comments |
|-----------|-------------|----------|--------|-------------|------|----------|
| ORPC-3A   | 47          | 18.20    | 47.00  | 28.80       | 0.83 |          |
|           |             | 72.95    | 113.00 | 40.05       | 0.81 |          |
| ORPC-B    | 82          | 82.70    | 93.60  | 10.90       | 0.84 |          |
|           |             | 125.60   | 138.80 | 13.20       | 0.62 |          |
|           |             | 165.00   | 170.60 | 5.60        | 0.50 |          |
|           |             | 181.20   | 195.60 | 14.40       | 0.48 |          |
| ORPC-2B   | 140         | 7.10     | 25.05  | 17.95       | 1.83 |          |
|           |             | 56.90    | 73.20  | 16.30       | 0.30 |          |
|           |             | 89.40    | 100.80 | 11.40       | 0.44 |          |
|           |             | 120.60   | 127.50 | 6.90        | 0.56 |          |
|           |             | 145      | 179.10 | 34.00       | 0.58 |          |
| ORPC-C    | 43          |          |        |             | ***  | NSI      |
| ORPD-1    | 122         | 72.10    | 82.20  | 10.10       | 0.44 |          |
|           |             | 96.50    | 102.75 | 5.25        | 0.26 |          |
|           |             | 186.80   | 190.00 | 3.20        | 0.77 |          |
|           |             | 216.60   | 230.30 | 13.70       | 0.49 |          |
| ORPD-2BIS | 102         | 114.00   | 118.15 | 4.15        | 0.20 |          |
|           |             | 195.00   | 209.45 | 14.45       | 0.66 |          |
|           |             | 215.75   | 222.40 | 6.65        | 0.22 |          |
|           |             | 231.20   | 235.60 | 4.40        | 0.26 |          |
| ORPD-3    | 35          |          |        |             |      | NSI      |
| ORPD-4    | 130         |          |        |             |      | NSI      |
| ORPD-5    | 68          | 184.00   | 190.40 | 6.40        | 1.03 |          |
| ORPD-6    | 19          |          |        |             |      | NSI      |
| ORPD-7    | 28          |          |        |             |      | NSI      |

**TABLE 7**  
**MESPA : Oropesa Tin Deposi Drill Hole Assay Intercepts (0.20% Sn cut-off)**

**Intercept parameters : Minimum of 3 m length or 3 samples**

**\*\*\* Intercept (one or more assays ) present above cut-off, but does not meet criteria above.**

**Maximum of 3 m or 3 samples below cut-off between intercepts**

| Hole No. | # of Assays | From (m) | To (m) | Length (m)* | % Sn | Comments |
|----------|-------------|----------|--------|-------------|------|----------|
| ORPD-8   | 24          |          |        |             |      | NSI      |
| ORPD-9   | 55          |          |        |             | ***  | NSI      |
| ORPD-10  | 38          |          |        |             | ***  | NSI      |
| ORPD-11  | 124         | 18.40    | 22.80  | 4.40        | 1.74 |          |
|          |             | 185.20   | 194.20 | 9.00        | 0.36 |          |
|          |             | 199.50   | 213.40 | 13.90       | 1.08 |          |
| ORPD-12  | 154         | 77.70    | 82.70  | 5.00        | 0.28 |          |
|          |             | 95.05    | 102.60 | 7.55        | 0.69 |          |
| ORPD-13  | 37          | 214.8    | 221.00 | 6.20        | 0.28 |          |
| ORPD-14  | 36          | 134.40   | 138.60 | 4.20        | 0.23 |          |
| ORPD-15  | 54          | 108.10   | 128.70 | 20.60       | 0.67 |          |
| ORPD-16  | 24          |          |        |             | ***  | NSI      |
| ORPD-17  | 40          |          |        |             |      | NSI      |
| ORPD-18  | 20          |          |        |             |      | NSI      |
| ORPD-19  | 77          |          |        |             |      | NSI      |
| ORPD-20  | 6           |          |        |             |      | NSI      |
| ORPD-21  | 49          |          |        |             | ***  | NSI      |
| ORPD-22  | 44          |          |        |             | ***  | NSI      |
| ORPD-23  | 67          |          |        |             |      | NSI      |
| ORPD-24  | 5           |          |        |             |      | NSI      |
| ORPD-25  | 35          | 149.00   | 156.00 | 7.00        | 0.64 |          |
| ORPD-26  | 8           |          |        |             |      | NSI      |
| ORPD-27  | 60          | 95.10    | 105.00 | 9.90        | 0.60 |          |
| ORPD-28  | 59          | 140.80   | 170.35 | 29.55       | 0.63 |          |

**TABLE 7**  
**MESPA : Oropesa Tin Deposit Drill Hole Assay Intercepts (0.20% Sn cut-off)**

**Intercept parameters : Minimum of 3 m length or 3 samples**

**\*\*\* Intercept (one or more assays ) present above cut-off, but does not meet criteria above.**

**Maximum of 3 m or 3 samples below cut-off between intercepts**

| Hole No. | # of Assays | From (m) | To (m) | Length (m)* | % Sn | Comments |
|----------|-------------|----------|--------|-------------|------|----------|
|          |             | 204.20   | 208.20 | 4.00        | 0.51 |          |
| ORPD-29  | 45          | 25.00    | 31.00  | 6.00        | 0.20 |          |
| ORPD-30  | 23          |          |        |             |      | NSI      |
| ORPD-31  | 39          |          |        |             |      | NSI      |
| ORPD-32  | 109         | 73.60    | 79.50  | 5.90        | 0.38 |          |
|          |             | 155.90   | 159.80 | 3.90        | 1.07 |          |
| ORPD-33  | 78          | 231.05   | 254.80 | 23.75       | 0.35 |          |
| ORPD-34  | 58          | 81.45    | 89.45  | 8.00        | 0.48 |          |
|          |             | 119.7    | 127.60 | 7.90        | 0.34 |          |
| ORPD-35  | 69          |          |        |             |      | NSI      |
| ORPD-36  | 85          | 200.10   | 220.25 | 20.10       | 0.36 |          |
| ORPD-37  | 49          | 78.80    | 81.90  | 3.10        | 0.69 |          |
|          |             |          |        |             |      |          |
|          | 2687        |          |        |             |      |          |

\* : core length does not equal true width

NSI : No Significant Intercept - an intercept may be present but does not meet the parameters stated above.

|               |                    |
|---------------|--------------------|
| <b>Purple</b> | <b>&gt;1.00</b>    |
| <b>Red</b>    | <b>0.50 - 0.99</b> |
| <b>Orange</b> | <b>0.40 - 0.49</b> |
| <b>Yellow</b> | <b>0.30 - 0.39</b> |
| <b>Green</b>  | <b>0.20 - 0.29</b> |
|               |                    |

- ▶ Topaz and tourmaline mineralization as well as pegmatite and apalite dykes normally associated with tin deposits are absent. Thus the source granite is expected to be very deep and / or laterally distant.
- ▶ The oxidation zone (pervasive oxidation or strong to intense oxidation along fractures) is irregular but in places exceeds 100 m vertical depth. Hematite and limonite are dominant, but manganese oxide is common.
- ▶ The deepest intercept, that in IGME hole OR-8 from 212.0 to 243.4 m, is at 210 m below surface. Intercepts for several MESPA holes are in the same depth range.
- ▶ Assay intercepts for IGME drill holes OR-1 to 27 at a 0.10% Sn cutoff are presented in **Table 3**, and for MESPA holes at a 0.20% Sn cutoff in **Table 7**. Note that these are core lengths only and not necessarily true widths.
- ▶ Core intercepts vary greatly and may be as much as 55 m in length as in ORPC-5 (with a 0.20% Sn cutoff). Insufficient systematic drilling has been completed to determine the continuity of mineralization from hole to hole and section to section, thus true thicknesses of any mineral intercept cannot as yet be estimated.
- ▶ In ORP-2, the presence of alternating fresh rock with zones of pervasively oxidized rock has led MESPA geologists to conclude that portions of the intercept may have been repeated by faults.
- ▶ In addition to the above, breccia zones may indicate transverse faults. Again, insufficient systematic drilling has been conducted to allow a proper interpretation.

### **La Grana**

The **La Grana** Sn soil geochemical anomaly consists of two centres (La Grana West and La Grana East) about 1.3 km apart (**Figure 8**). IGME, in the mid to late 1980s, drilled five core holes to test La Grana West and eleven to test La Grana East. MESPA added another 14 holes at La Grana West in 2010 in an attempt to intersect mineralized fracture zones (structures) interpreted on the basis of the prospecting sample results. (**Refer to the following section titled “EXPLORATION”.**) Details regarding the La Grana tin mineralization follow, and have been summarized from reports of mineralogical studies initiated by IGME and as well observations by MESPA personnel when reviewing the IGME drill core or while logging the MESPA drill core.

- ▶ La Grana West measures some 750 m E/W by 300 to 400 m N/S while La Grana East is roughly triangular in shape with sides about 500 m by 500 m (**Figures 8 & 13**).
- ▶ Drill hole assay intercepts for the IGME core holes using a 0.10% Sn cut-off are listed in

4246000 000000

4244000 000000

284000 000000

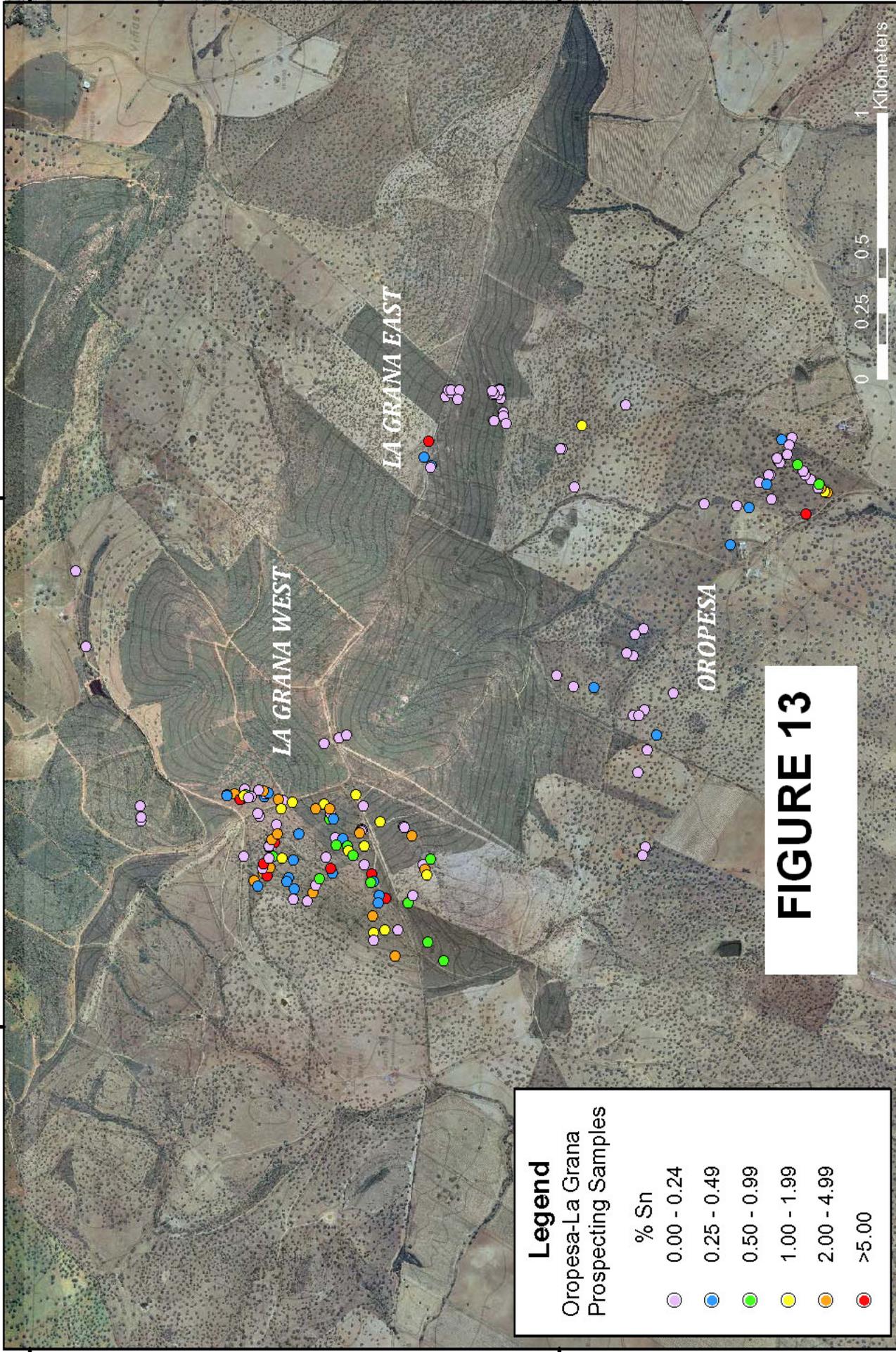
284000 000000

282000 000000

282000 000000

4246000 000000

4244000 000000



**FIGURE 13**

**Legend**

Oropesa-La Grana  
Prospecting Samples

| % Sn        | Color  |
|-------------|--------|
| 0.00 - 0.24 | Purple |
| 0.25 - 0.49 | Blue   |
| 0.50 - 0.99 | Green  |
| 1.00 - 1.99 | Yellow |
| 2.00 - 4.99 | Orange |
| >5.00       | Red    |



Projection UTM  
European Datum 1950  
Zone 30 S

OROPESA LA GRANA PROJECT  
Prospecting Samples  
Location: Cordoba province, Spain  
Date : 14-11-2010

**Table 5**, and for the MESPA core holes at 0.20% Sn in **Table 8**.

- ▶ The tin mineralization occurs in expansion stockwork fracture systems (which indicates brittle fracturing).
- ▶ Epithermal quartz in-fills some fractures to form veins or otherwise line the fracture walls. Vugs in the veins or in the host quartzite are generally small. Cassiterite plus pyrite and arsenopyrite are present in the fractures, veins and in vugs.
- ▶ The fracture intensity in the host rocks, as seen in drill core, varies from weak to very strong, and is weakest where there is a greater abundance of slate beds. The quartz veins and fractures are generally thin, less than 1cm, which may indicate that these two areas of mineralization are peripheral to the main mineralized system or that any cohesive tin deposit occurs deeper.
- ▶ Cassiterite, as seen in core from IGME drill hole GR-10 and in hand samples can be coarse grained (>2mm).
- ▶ At La Grana West cobble size float samples with assay values >1% Sn tin mineralization are widespread over an area approximately 500 m by 500 m (**Figure 1**). The highest value for any hand sample is 41.7% Sn.
- ▶ Insufficient systematic grid drilling has been completed at either La Grana occurrence to confirm continuity to any individual vein or zone. Widths of mineralization are <5 m.
- ▶ As at Oropesa, in the upper portions of drill holes iron and manganese oxides are often noted filling the fractures which has led MESPA geologists to hypothesise that sulphide mineral have been destroyed by weathering thus freeing the cassiterite mineralization which would then be susceptible to loss by the circulating drill water.

### **Model**

In 2009 / 2010, MESPA personnel reviewed and re-interpreted the IGME exploration data and in particular the soil geochemical results. Based upon the review / re-interpretation, MESPA developed a working model for tin mineralization emplacement at Oropesa and La Grana. The model is up-dated or replaced as new data become available. Currently, MESPA are considering two model. The sequence of events for the **first model**, as proposed by P. Miller (**Figure 14**), is as follows;

- ▶ During the Middle to Upper Carboniferous, a long linear graben formed between two WNW striking faults parallel to the regional, WNW / ESE structures of the Ossa Morena

**TABLE 8****MESPA : La Grana Tin Occurrences Drill Hole Assay Intercepts (0.20% Sn cut-off)**

| Hole No. | Zone | # of Assays | From (m) | To (m) | Length (m)* | % Sn |
|----------|------|-------------|----------|--------|-------------|------|
| LGR-1    | West | 135         | 56.00    | 58.30  | 2.30        | 0.23 |
| LGR-2    | West | 33          |          |        |             | NSV  |
| LGR-3    | West | 38          |          |        |             | NSV  |
| LGR-4    | West | 131         | 45.35    | 46.70  | 1.35        | 0.50 |
|          |      |             | 50.70    | 51.70  | 1.00        | 0.63 |
| LGR-5    | West | 0           |          |        |             | NSV  |
| LGR-6    | West | 123         | 117.10   | 121.10 | 4.00        | 0.29 |
| LGR-7    | West | 179         | 26.90    | 28.00  | 1.10        | 0.59 |
|          |      |             | 93.10    | 95.10  | 2.00        | 1.97 |
| LGR-8    | West | 0           |          |        |             | NSV  |
| LGR-9    | West | 166         |          |        |             | NSV  |
| LGR-10   | West | 100         | 65.00    | 67.00  | 2.00        | 0.41 |
| LGR-11   | West | 64          |          |        |             | NSV  |
| LGR-12   | West | 89          |          |        |             | NSV  |
| LGR-13   | West | 148         | 45.40    | 46.40  | 1.00        | 0.63 |
|          |      |             | 68.40    | 69.40  | 1.00        | 2.35 |
|          |      |             | 121.35   | 124.35 | 3.00        | 0.33 |
|          |      |             | 129.40   | 131.40 | 2.00        | 0.70 |
| LGR-14   | West | 128         | 3.80     | 9.90   | 6.10        | 0.30 |
|          |      |             | 54.05    | 55.10  | 1.05        | 0.60 |
|          |      |             | 77.40    | 78.40  | 1.00        | 0.86 |
|          |      |             | 88.30    | 89.20  | 0.90        | 1.19 |
|          |      | 1334        |          |        |             |      |

\* : Core length intercept does not equal true width

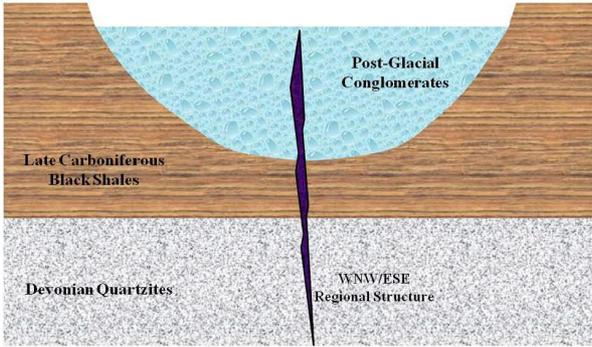
NSV : no significant values or no values that meet the criteria below.

Intercept parameters : 1) a single sample with a grade >0.5% Sn

2) Minimum of 2m or 2 samples; Maximum of 2m or 2 samples below cut-off between values.

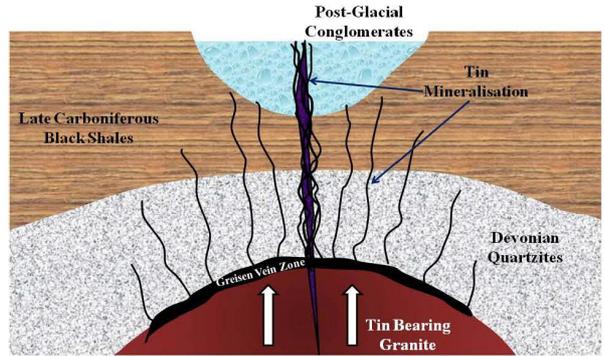
# OROPESA GENESIS : MODEL 1

X-Section Oropesa – Circa 305 Million Years Ago



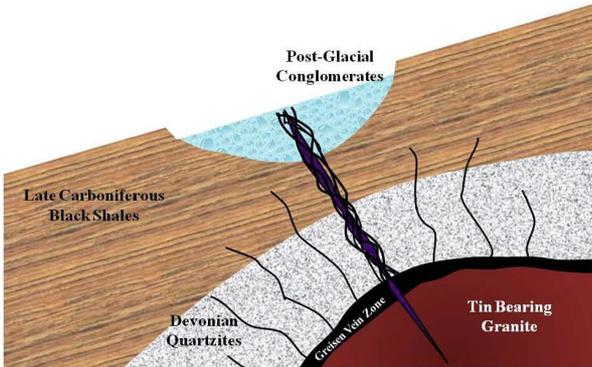
**a**

X-Section Oropesa – Circa 290 Million Years Ago



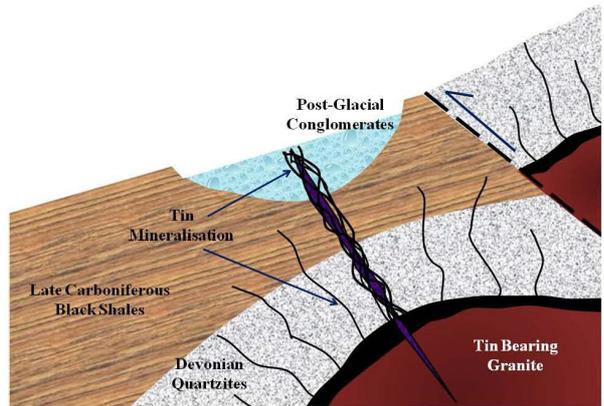
**b**

Post-Mineralisation – Local Tilting of ~20-25°

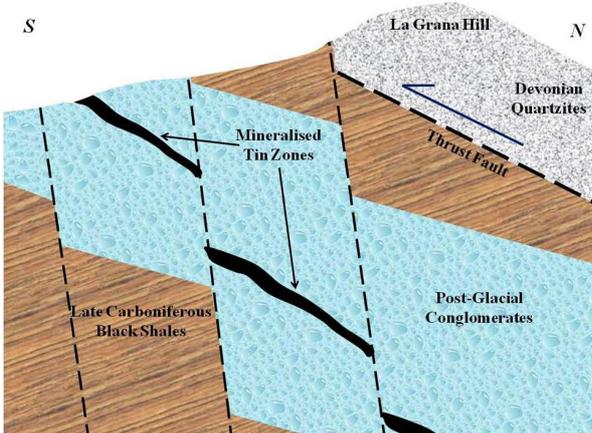


**c**

Thrust Fault – Post Mineralisation



**d**



**e**

**FIGURE 14**

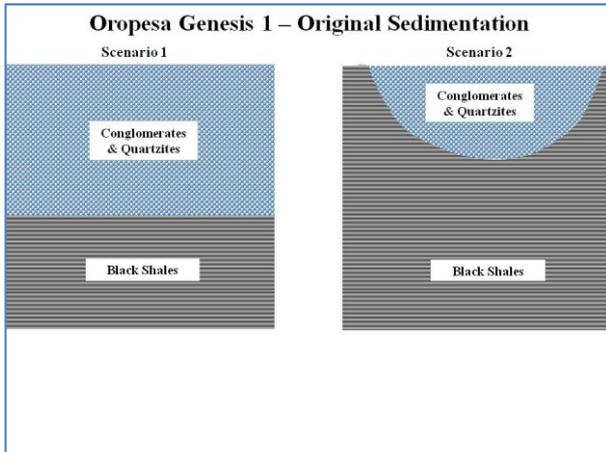
Zone to create a basin. Sediments were deposited in the basin during Middle to Upper Carboniferous times into a marine environment of medium to shallow depth. The basin was subject to earthquake activity which resulted in the formation of turbidites.

- ▶ Regional lineaments or shear zones formed parallel to the basin margins, possible associated with the earthquake activity of above.
- ▶ During the Permian, glaciers carved channel ways centred on the shear zones. Post glaciation, the channel ways were in-filled with coarse outwash material - the conglomerate (**Figure 14a**).
- ▶ In the Late Permian, a tin rich granite, or at least the tin rich phase of a tin bearing granite, was intruded centred beneath the property folding the overlying semi consolidate sediments.
- ▶ The intrusion of the granite acted upon the pre-existing (probably tight) lineaments or structures causing them to open due to tensional forces. Cross faults (transverse to the direction of the pre-existing structures) were probably created contemporaneously also by tensional forces (**Figure 14b**).
- ▶ Gas and fluid from the granite were channelled upward into the overlying stratigraphy along the structures and at the intersections in multiple injections (**Figure 14b**). The first injection deposited tin. Sulphide and other minerals were deposited in later injections.
- ▶ The region was tilted some 20 to 25° due to either regional folding or block faulting (**Figure 14c**).
- ▶ A post mineralization thrust fault uplifted the older quartzite now exposed in the northern part of the property as La Grana hill (**Figure 14d**).
- ▶ Subsequent normal faults have stepped the mineralization downward (**Figure 14e**).
- ▶ Weathering over the last +/- 250 million years has eroded the cover rocks at Oropesa and deeply weathered the host rocks and the deposit.

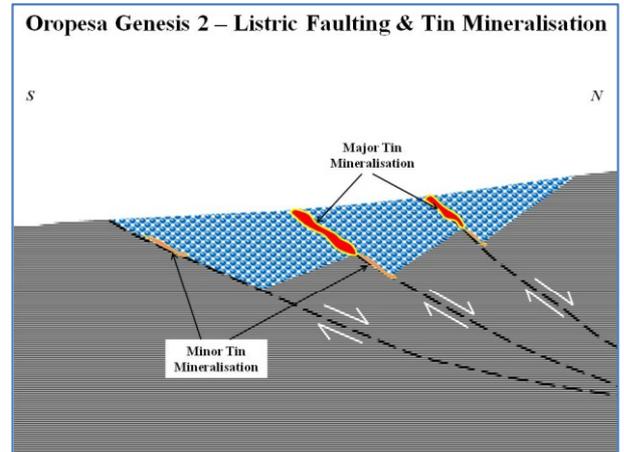
Details for the **second model** follow (**Figure 15**);

- ▶ The stratigraphic sequence developed during the Upper Carboniferous and was possibly modified by glaciation during the Permian (**Figure 15a**).
- ▶ The general Oropesa area was subjected to Listric faulting with the creation of wedge shaped blocks (**Figure 15b**).
- ▶ Gases / fluids from a granite source (that may have been several kilometres distant) rise

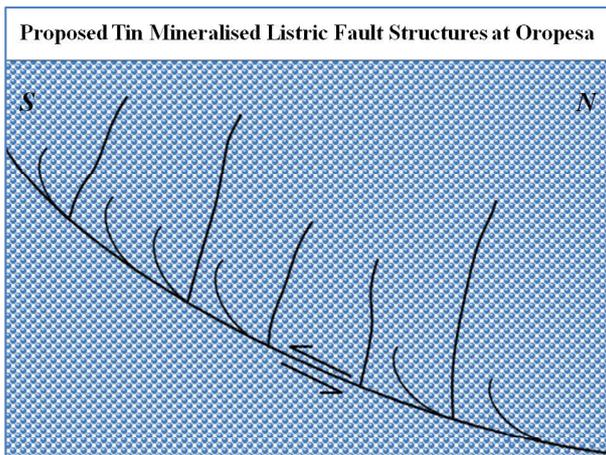
# LISTRIC FAULT MODEL



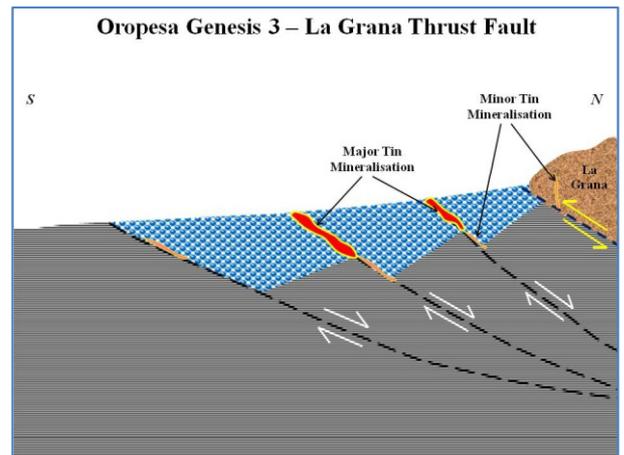
**a**



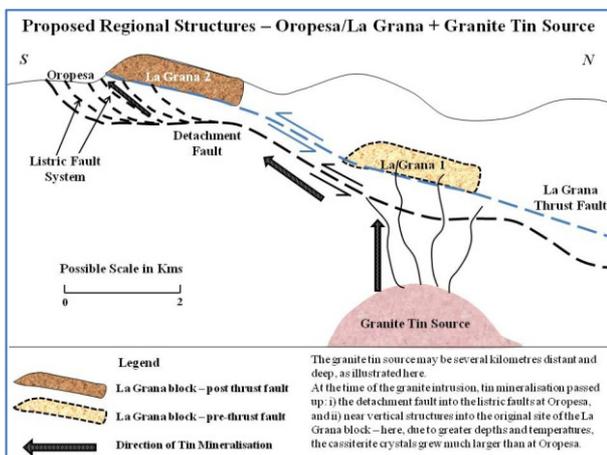
**b**



**c**



**d**



**e**

**FIGURE 15**

along the Llistric fault planes with tin mineralization preferentially deposited where the fault cuts conglomerate or arenite units (**Figure 15b**). Splay faults (**Figure 15c**) developed from the Llistric faults may also be mineralized.

- ▶ A later thrust fault sub-parallel to the Llistric fault emplaced the older La Grana quartzite rocks above the younger Oropesa rock units (**Figure 15d & 15e**).

## **DEPOSIT TYPES** (Summarized from Taylor, 1979 and Pollard & Taylor, 1985)

Primary tin deposits are almost always associated with granite intrusions, are usually situated within 500 m of the granite contact, and occur in different geological settings. Five general types are recognized (see below). Those geological settings from which major tin production has been achieved are marked with an \*.

1. *Fold belt type - a) volcanic*  
   *b) subvolcanic\**  
   *c) subvolcanic - plutonic (mixed)\**  
   *d) plutonic\**
2. *Anorogenic*
3. *Precambrian pegmatitic*
4. *Precambrian rapakivi*
5. *Bushveld*

The general Oropesa property area lies within a “fold belt” regime, but as the source granite for the Oropesa tin mineralization has not been definitely identified, classification as to subtype setting is not yet possible, however, the dearth of volcanic rocks in the area rules out the volcanic subtype. Granite bodies associated with the remaining 3 subtypes occur in a variety of forms from small stocks to large scale, multi-phased intrusive complexes. These granite bodies were emplaced post major folding, and were controlled by major fracture / suture zones.

Tin bearing granites frequently evolve through a series of related granites, and thus become smaller and more geochemically specialised, such that mineralization is often related to small, fine grained plutons which are the final intrusive phase. Although major mineralogical and geochemical features of tin bearing granites are recognized (see below), no one criteria is diagnostic.

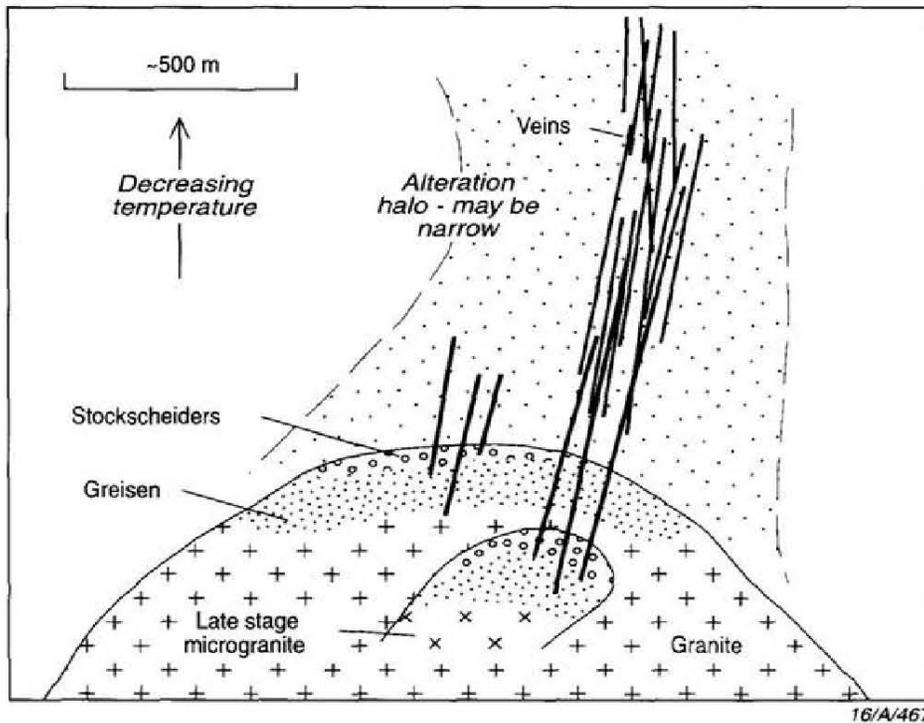
- ▶ association with postorogenic, polyphase intrusive complexes at a hypabyssal intrusion level;
- ▶ confinement to the apical stage of batholiths;

- ▶ increase in the content of specific rare elements (F, Rb, Li, Sn, Be, W, Mo) in comparison to normal granites (see below);
- ▶ strong increase in granitophile elements from the older to the younger intrusive phases;
- ▶ special association of accessory minerals of which, cassiterite, topaz, fluorite, tourmaline, columbite-tantalite and beryl are the most important;
- ▶ paragenetic sequence of crystallization where quartz appears as an early and dark mica as a late crystallization product;
- ▶ late to postmagmatic autometasomatic alteration producing microcline, albite and sericite. Ranges (ppm) for various trace elements in tin bearing granites are;

|    |               |
|----|---------------|
| F  | 3700 +/- 1500 |
| Rb | 580 +/- 200   |
| Li | 400 +/- 200   |
| Sn | 40 +/- 20     |
| Be | 13 +/- 6      |
| W  | 7 +/- 3       |
| Mo | 3.5 +/- 2     |

Tin deposits in fold belt regimes may occur in a variety of styles; major breccia pipe systems, massive greisen systems, brittle fracture systems (veins / pipes, stockwork / sheeted veins), carbonate replacement deposits and tin bearing skarns. These are shown schematically in **Figure 16**. All major examples of **Breccia pipe** deposits occur within boron (tourmaline) rich systems, and as such, it is thought that such systems are more prone to boiling with the production of gas rich phases. Although breccia systems may be large (>1000 m diameter), they are frequently difficult to recognize for a variety of reasons including alteration overprinting. Breccias may display collapse, hydrothermal or gaseous-hydrothermal style features. Sericite (+/- chlorite) is the dominant alteration product with an outer shell of argillite alteration and a possible inner core of tourmaline alteration. Mineralization normally consists of quartz-cassiterite-tourmaline-sulphides+/-fluorite+/-siderite often in vugs. An example of breccia pipe mineralization is the Ardlethan mine in Australia, ~10x10<sup>6</sup> tonnes grading ~0.5% Sn, which includes several breccia pipes.

With **Massive greisen** style tin systems, lenticular to massive alteration zones are associated with cusps on the surface of late-stage, geochemically specialized granites. The mineralization zones occur as massive, irregular or sheet-like bodies extending beneath the contact for 10 - 100



**SOURCE**

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**Palaeozoic tin ± tungsten deposits in eastern Australia**

P. Blevin

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**FIGURE 16**

m, and consist of fluorine-rich, sericite-silicic alteration envelopes mineralized with cassiterite and sulphides. Most systems, regardless of tonnage, grade in the 0.05 - 0.20% Sn range, and thus economic deposits are rare unless there is / are associate deposit types(s) of higher grade.

Deposits of the **Brittle fracture system** vary greatly in their geometry (veins/pipes, stockwork/sheeted veins), and size (~800,000 tonnes @ ~1.8% Sn for the Adit 22 deposit in Indonesia to  $17 \times 10^6$  tonnes @ 0.17% Sn for the Taronga deposit). Arenaceous metasediments (quartzite, felspathic sandstone) are particularly receptive to intense brittle fracturing required for such deposits. Major vein systems occur where the faults and fractures are well developed and close enough to allow for the development of a single mine. Features common to multiple quartz-cassiterite veinlet system include;

- ▶ veinlets are massed and parallel, generally between 1 and 10 mm thick, and generally steep dipping;
- ▶ fracture intensity is usually between 5 and 100 fractures / metre, with between 5 - 10% of the total rock volume mineralized;
- ▶ associated minerals include arsenopyrite, pyrite, fluorite, muscovite, topaz, wolframite, chalcopyrite, sphalerite;
- ▶ cassiterite is relatively coarse grained;
- ▶ each deposit usually contains several mineralized lenses several hundred metres in length (individual areal size is commonly between 10 and 50 hectares);
- ▶ all deposits exhibit at least one strong structural control;
- ▶ some deposits appear to exhibit classical vertical zonation;
- ▶ alteration is observed both regionally around lenses and locally adjacent to veinlets; massive silicification may accompany massed veining;
- ▶ deposits usually occur within sediments and / or volcanics within tin-bearing granite districts;
- ▶ the morphology of the upper surface of the source granite beneath the deposits appears to have a control on mineralization; and
- ▶ associated soils (geochemical signature) that are strongly anomalous in Sn, As, Cu, Pb, Zn, and F.

**Carbonate replacement-style** tin deposits, due to their size and grade, are the most desired deposit type. They occur where major fracture zones, that channel fluids upwards from a granite,

intersect carbonate-rich horizons such as limestone, dolomite or calcareous sediments. If the fracture intersects more than one calcareous unit, mineralization is more intense in the first horizon intersected. Mineralization comprises cassiterite and sulphides, and due to the often massive nature of the sulphides airborne magnetic and electromagnetic surveys are normally employed in the search for such deposits.

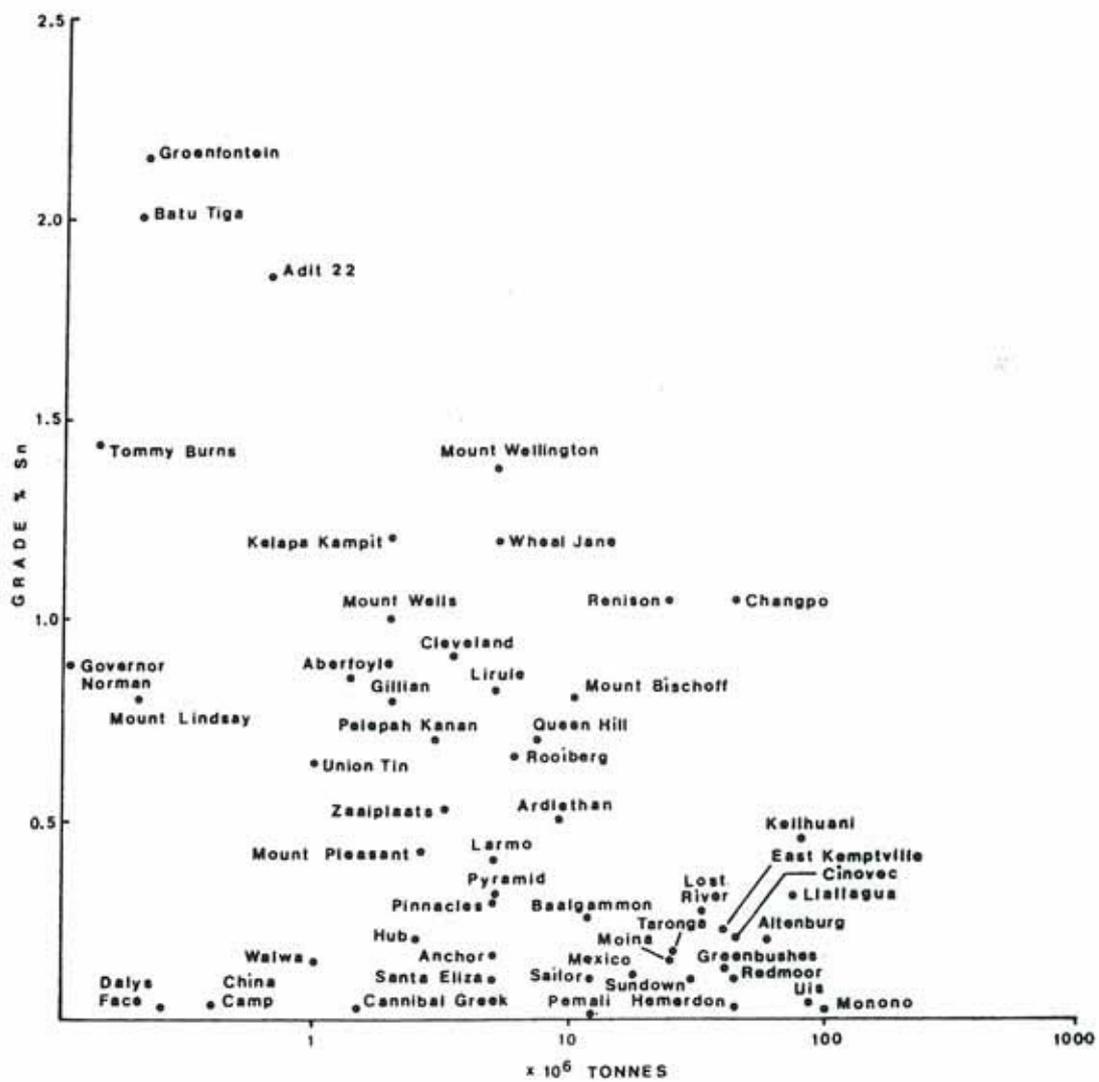
**Tin-bearing skarn** deposits generally form irregular replacement or fracture controlled concentrations, and are normally located at contacts between a tin bearing granite and various calcareous rocks including dolomite, limestone, calcium or magnesium rich sediments and basic igneous rocks such as basalt. The mineralizing fluids may be fluorine, chlorine or boron dominated. Most skarns exhibit 2-5 phases of overprinting mineralization with tin in the earlier, high temperature phases contained within component minerals (magnetite, pyroxene, garnet, spinel, etc.) and cassiterite only present in the cooler middle to late phases. Sulphide mineralization is enriched in the late phases. The mode of formation and tendency for multi-phase overprinting often results in erratic cassiterite distribution.

Tin deposits containing substantive sulphide content are relatively rare, although minor amounts are common as late stage paragenetic overprints. Substantive sulphides usually occur a) in late stage high level vein systems or b) as replacement bodies in carbonate dominant terrains. The Oropesa deposit differ in that there is a combination of considerable sulphide mineralization in veins with considerable replacement of **non carbonate rich** host rocks (Taylor, May 2011). As a result, Taylor believes that the tin mineralization on the Oropesa property belongs to a post orogenic sulphur dominant tin system of the deep subvolcanic type (P. Miller, pers. comm.).

The size and grade for various tin deposits worldwide is presented in **Figure 17**. At the current (August 5, 2011) price for tin of about \$11.71 US/lb (\$25.75 US/kg) [[www.infomine.com/commodities/tin.asp](http://www.infomine.com/commodities/tin.asp)], it is obvious that any deposit  $>5 \times 10^6$  tonnes and grading  $>0.20\%$  Sn is an attractive exploration target.

## EXPLORATION

Previous exploration efforts by entities other than MESPA have been summarized in the section titled “**HISTORY**”.



TONNAGE-GRADE DIAGRAM FOR WORLD TIN DEPOSITS

**Figure 17**

(From Pollard and Taylor, 1985)

Since acquiring the property MESPA has:

- ▶ Concluded access agreements with key surface rights holders (Olarde Soto, 2011);
- ▶ Re-viewed and re-interpreted the IGME data (discussed in the section titled “**MINERALIZATION** ”);
- ▶ Developed an exploration model for tin emplacement on the Oropesa property (discussed in the section titled “**MINERALIZATION**“);
- ▶ In 2009, conducted mineralogical and metallurgical test studies on two samples of Oropesa core - IGME holes OR -11 and 27 (discussed in Burns, January 2011 with the results included again in this report in the section titled “**METALLURGY**” ).
- ▶ In early 2011, conducted in early 2011 metallurgical test studies on three rock samples collected from surface in the eastern Oropesa area (discussed in the section titled “**METALLURGY**” ).
- ▶ Prospected the area in and about the mineral occurrences. During several prospecting forays from 2008 to 2010 MESPA personnel collected more than 160 float samples from the property. The bulk of the samples were collected at La Grana West, but some were collected at La Grana East and Oropesa as well. UTM coordinates for each sample were taken with a hand held, retail grade GPS unit with an accuracy of +/- 5m. A plot with sample locations and assay range data is presented as **Figure 13**. The grab samples were of cobble size and initially were collected randomly. As patterns (basically alignments of the better grades - particularly at La Grana West) emerged from the results, samples were collected to confirm alignments. Many of the samples collected along an alignment contained visible cassiterite (or at least suspected cassiterite). MESPA interpreted the alignment of higher grade samples at La Grana West to represent underlying mineralized structures which were then targeted for drill testing. Sampling and assay procedures were discussed in Burns (January, 2011).
- ▶ Completed a trenching program at La Grana West and La Grana East. The trench program, conducted in 2010, comprised eighteen (18) trenches which ranged in length from 8 to 30 m (720 m cumulative length) at La Grana West and a single trench at La Grana East (284 m). The purpose for the trenches was to expose the bedrock across alignments of prospecting sample with higher values to determine if the alignments did indeed represent mineralized structures. Although sporadic high tin assays were encountered, MESPA now believes that at least some alignments of samples with higher grade assays are due to soil creep. Sampling and assay procedures were discussed in Burns (January, 2011).
- ▶ Completed a brief test pitting program. During early 2011, nine (9), small test pits were excavated in the Arroyo Majavacas flood plain in the SE portion of the property, to test for

the potential existence of alluvial tin deposits. The pits were dug with a backhoe to depths from 1.7 m to 2.7 m into bedrock. One or two samples were taken from each pit of the material between the overlying soil and underlying rock. Assays ranged from 6 to 219 ppm tin and only two of twelve samples assayed greater than 100 ppm tin. As the Arroyo Majavacas is the most prominent water course on the property the results indicate that there is minimal chance for the presence of an alluvial tin deposit of any size or grade.

- ▶ Completed IP-resistivity and magnetic geophysical surveys (Granda-Sanz, 2011). Work was completed between February and June, 2011. The IP-resistivity survey comprised 50.02 line km on 34 lines oriented in a general NE/SW direction and nominally spaced either 50 or 100 m apart. Lines were set in the field using a retail grade GPS with an accuracy of +/- 5 m. A dipole - dipole electrode array was used with an “a” spacing (the distance between dipole electrodes) of 20 m and an “n” values (the distance between the current dipole and the receiving potential dipole) of 1 to 20. Numerous sub parallel NNW / SSE anomalies were delineated / interpreted (**Figure 18**). The Oropesa mineralization, as currently know, corresponds with anomalies in the central portion of the survey area. A thorough review of the IP/resistivity data and the drill results is required to determine the geophysical signature of the mineralization. Other anomalies were tested subsequently with disappointing results. (See “**Drilling**” below.)

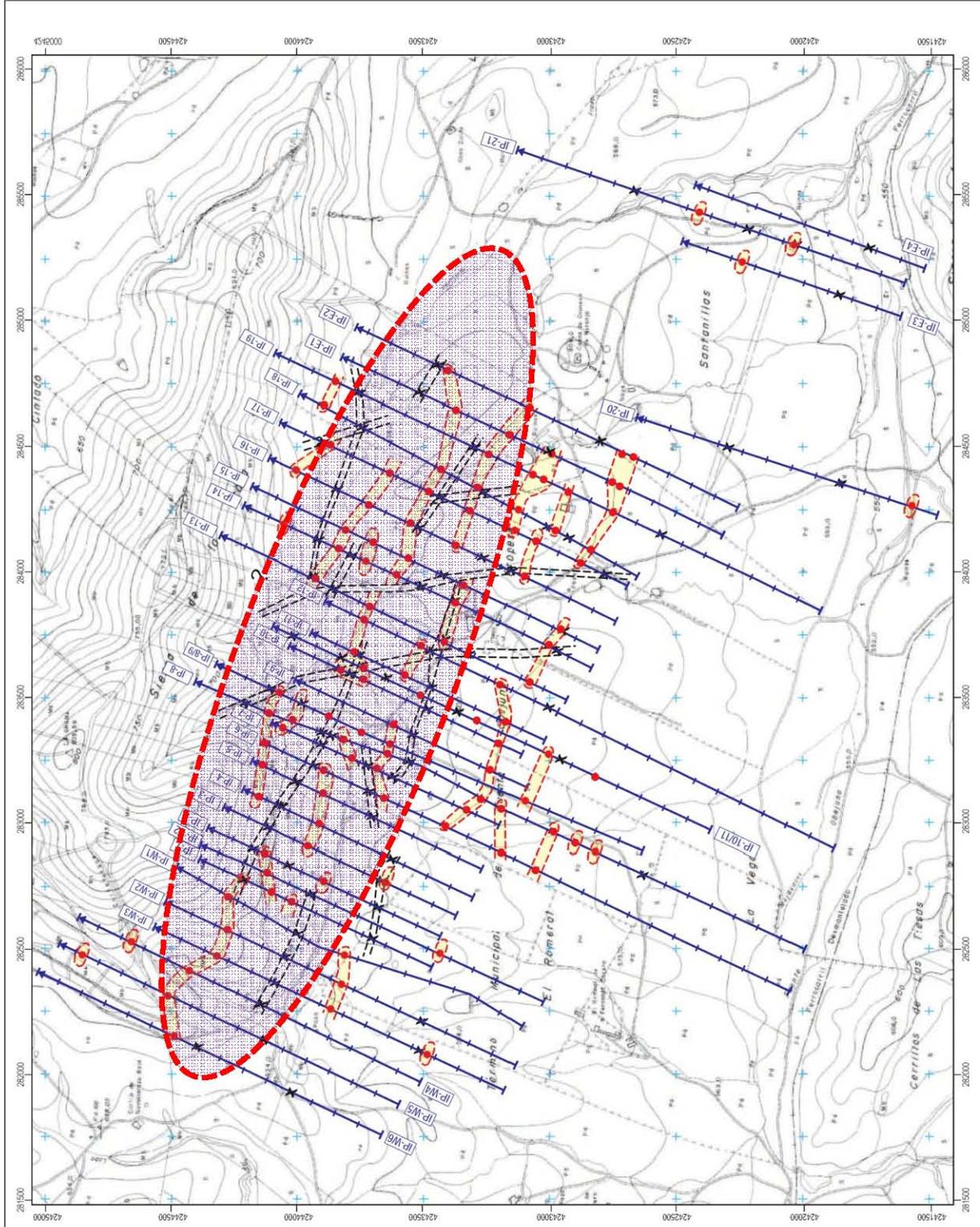
The magnetic survey comprised 63.5 km conducted along the same NE/SW lines as the IP-resistivity survey plus 6 additional lines and 3 tie lines. Readings were taken automatically every 2 seconds as the operator walked along the lines. A GPS built into the instrument simultaneously recorded the reading location. Although the magnetic contrast across the survey area is minor, disruptions, probably the result of faults, can be seen. In addition, results show a general NW/SE trend, and that the Oropesa mineralization lies at a slight change between slightly more magnetic rocks (shales) to the SW and less magnetic rocks (conglomerate) to the NW.

A thorough review of the geophysical and associated drill hole data is required so that the geophysical data may be used effectively. Such a review should be conducted by an independent geophysicist preferably familiar with tin deposits.

- ▶ Conducted a core drilling program from March to November 2010 that comprised twenty-six (26), HQ size core holes - 14 holes at La Grana West (2019.1 m) and 12 holes at Oropesa (2035.0 m) for a combined total of 4054.1 m. Details regarding that drill program were discussed in Burns, January 2011 with the assay results repeated below in the section titled “**DRILLING**”.
- ▶ **Completed an additional drill program** from December 2010 to August 2011 on the Oropesa deposit which comprised 9,751.65 m in 45 drill holes (discussed below in the section titled “**DRILLING**”).

# FIGURE 18

IP Anomalies



## LEGEND

-  Approximate area of mineralization
-  IP anomaly according to the sections (maps 2 to 35)
-  Fault

|  |   |
|--|---|
| MINAS DE ESTIÑO DE ESPAÑA  |   |
| Induced Polarization - Resistivity and Magnetics Geophysical Survey in Oropesa - La Grana Prospect |   |
| Interpretation and Synthesis for IP-R measurements   |   |
| Scale: 1:10,000  | Consultant:  |
| Date: February - June 2011   | Number: 40  |

## DRILLING

### General

Between 1983 and 1990 the government agency IGME drilled 49 core holes on the Oropesa property, 33 at the Oropesa deposit plus 5 at the La Grana West occurrence and 11 at the La Grana East occurrence. A basic description of the IGME drill programs is presented in the section titled “**HISTORY**”.

Between March and November, 2010 MESPA completed a core drilling program that comprised 26 holes (14 at La Grana and 12 at Oropesa) with a 4954.1 m cumulative length. The program was fully described in Burns (January, 2011). Only the assay intercepts that resulted from that drill program are repeated herein in **Table 7** for Oropesa and **Table 8** for La Grana.

### Oropesa

From December 2010 to July, 2011 MESPA completed a second core drilling program on the Oropesa deposit comprising 45 holes (**Figure 7**) with a cumulative length of 9,751.65 m. Basic drill data are presented in **Table 9** for Oropesa. The core size throughout the program was HQ (diameter 63.5 mm or 2.50 inches). Sondeos y Perforaciones Industriales del Bierzo, S.A. (SPIB), the property vendor, was the drill contractor.

Holes were drilled for the following purposes **a)** to fence across the mineralized zones to determine the grade and attitude of the zones or expand the zones laterally, **b)** to test targets delineated by the geophysical (IP-resistivity) survey, **c)** to determine the source of high grade tin boulders found in the SE sector of the property and **d)** to check for the existence of an interpreted structure or **e)** combinations of reasons a) to d). Holes locations were planned (in UTM coordinates) based upon data compiled in Datamine. Geologists spotted holes (and fences of holes) using a compass and retail grade GPS. In-hole orientation was measured at +/- 50 m intervals with Reflex single shot instrument which employs a magnetic compass to measure azimuth and a pendulum inclinometer to measure dip. [Note errors in the azimuth reading may occur due to the presence of magnetic minerals in the rocks, such as pyrrhotite at Oropesa.] Upon delivery of the core to the core logging facility MESPA geologists routinely **1)** measured the RQD

**TABLE 9**  
**MESPA ; Oropesa Tin Deposit Drill Hole Data**

| <b>Hole No.</b>   | <b>Azimuth<br/>(mag)</b> | <b>Dip</b> | <b>Length (m)</b> | <b>x Coordinate*</b> | <b>y Coordinate*</b> |
|---|--------------------------|------------|-------------------|----------------------|----------------------|
| ORP-1   | 015                      | 60 N       | 250.00            | 283653               | 4243442              |
| ORP-2   | 015                      | 60 N       | 182.50            | 283740               | 4243330              |
| ORP-3   | 190                      | 50 S       | 184.30            | 283899               | 4243385              |
| ORP-4   | 200                      | 50 S       | 155.70            | 283951               | 4243369              |
| ORP-5   | 185                      | 65 S       | 194.00            | 283951               | 4243368              |
| ORPC-1  | 020                      | 60 N       | 80.50             | 283288               | 4243771              |
| ORPC-2  | 005                      | 60 N       | 193.20            | 283275               | 4243740              |
| ORPC-3  | 020                      | 60 N       | 105.00            | 283265               | 4243715              |
| ORPC-4  | 020                      | 60 N       | 128.50            | 283260               | 4243700              |
| ORPC-5  | 020                      | 60 N       | 161.60            | 283247               | 4243664              |
| ORPC-6  | 020                      | 60 N       | 173.00            | 283243               | 4243643              |
| ORPC-7  | 020                      | 60 N       | 226.70            | 283233               | 4243618              |
|   |                          |            | 2035.00           |                      |                      |
| The above holes were reported upon in Burns (January, 2011) |                          |            |                   |                      |                      |
| ORPC-9  | 000                      | 60 N       | 156.30            | 283202               | 4243774              |
| ORPC-A  | 213                      | 60 S       | 244.60            | 283215               | 4243855              |
| ORPC-1A   | 215                      | 60 S       | 311.50            | 283288               | 4243769              |
| ORPC-2A   | 005                      | 45 N       | 97.20             | 283275               | 4243740              |
| ORPC-3A   | 000                      | 45 N       | 12.60             | 283265               | 4243715              |
| ORPC-B  | 220                      | 60 N       | 240.70            | 283202               | 4243821              |
| ORPC-2B   |                          | 90         | 223.40            | 283275               | 4243740              |
| ORPC-C  | 152                      | 60 S       | 124.20            | 283357               | 4243797              |
| ORPD-1  | 222                      | 60 S       | 283.70            | 283353               | 4243799              |
| ORPD-2BIS   | 216                      | 50 S       | 304.00            | 283346               | 4243843              |
| ORPD-3  | 200                      | 60 S       | 260.15            | 283272               | 4243995              |
| ORPD-4  | 200                      | 60 S       | 365.00            | 283794               | 4243895              |
| ORPD-5  | 200                      | 60 S       | 289.05            | 283208               | 4243911              |
| ORPD-6  | 018                      | 60 N       | 240.80            | 282961               | 4243912              |
| ORPD-7  | 201                      | 60 S       | 185.30            | 283575               | 4243788              |
| ORPD-8  | 020                      | 65 S       | 210.00            | 283575               | 4243788              |
| ORPD-9  | 160                      | 60 N       | 269.10            | 282961               | 4243912              |

TABLE 9

## MESPA ; Oropesa Tin Deposit Drill Hole Data

| Hole No. | Azimuth (mag) | Dip  | Length (m) | x Coordinate* | y Coordinate* |
|----------|---------------|------|------------|---------------|---------------|
| ORPD-10  | 201           | 60 S | 216.65     | 283466        | 4243820       |
| ORPD-11  | 232           | 60 S | 283.90     | 284089        | 4243146       |
| ORPD-12  | 190           | 65 S | 222.90     | 282997        | 4243972       |
| ORPD-13  | 354           | 50 N | 279.20     | 284031        | 4242870       |
| ORPD-14  | 235           | 70 N | 260.40     | 284021        | 4243164       |
| ORPD-15  | 201           | 65 N | 212.90     | 283060        | 4243967       |
| ORPD-16  | 230           | 60 N | 281.10     | 284206        | 4243194       |
| ORPD-17  | 017           | 45 N | 231.50     | 282961        | 4243912       |
| ORPD-18  | 231           | 50 S | 196.00     | 284108        | 4243422       |
| ORPD-19  | 016           | 65 N | 178.00     | 282961        | 4243912       |
| ORPD-20  | 201           | 60 S | 236.50     | 283411        | 4243206       |
| ORPD-21  | 187           | 60 S | 133.70     | 282961        | 4243912       |
| ORPD-22  | 023           | 75 N | 176.50     | 283176        | 4243676       |
| ORPD-23  |               | 90   | 147.70     | 282961        | 4243912       |
| ORPD-24  | 200           | 75 S | 158.60     | 283411        | 4243206       |
| ORPD-25  | 201           | 60 S | 181.00     | 283013        | 4244040       |
| ORPD-26  | 020           | 60 N | 218.20     | 283369        | 4243093       |
| ORPD-27  | 192           | 65 S | 154.70     | 282879        | 4243997       |
| ORPD-28  | 342           | 45 N | 217.70     | 283296        | 4243893       |
| ORPD-29  | 188           | 60 S | 140.90     | 282894        | 4244052       |
| ORPD-30  | 218           | 85 S | 239.50     | 283387        | 4244085       |
| ORPD-31  | 206           | 60 S | 133.70     | 283068        | 4243411       |
| ORPD-32  | 200           | 60 S | 191.30     | 283119        | 4243890       |
| ORPD-33  | 200           | 60 S | 341.20     | 283721        | 4243576       |
| ORPD-34  | 200           | 60 S | 190.80     | 283393        | 4243677       |
| ORPD-35  | 201           | 60 S | 182.50     | 283054        | 4243902       |
| ORPD-36  | 200           | 60S  | 341.60     | 283818        | 4243435       |
| ORPD-37  | 200           | 60 S | 185.40     | 283337        | 4243664       |
|          |               |      | 9751.65    |               |               |

\* European 1950 datum, zone 30S : Measured with hand held GPS

[RQD or **R**ock **Q**uality **D**enominator is a method by which the structural integrity of the rock is determined], **2)** determined the core recovery, **3)** photographed the core, **4)** logged the core and **5)** selected and marked out the samples for assay. All data were entered into computer files for easy recovery and use in a future resource estimation.

Assay intercepts (0.20% Sn cutoff) for these holes are presented in **Table 7**. Note that the assay interval lengths listed in **Table 7** are not an indication of the mineralization true thickness. Additional sectional drilling is required in order to first determine the geometry of the mineralized structure(s) from which the true thickness can then be determined. Assay intercept boundaries at 0.02% Sn cut off are, in many instances, well defined with individual assay values quickly dropping to detection limits. Alternatively, there may be short intervals bounding the intercept of sub cut-off grade material.

At the end of the November 2011 drill program, MESPA concluded that the Oropesa mineralization dipped to the north, and consequently that MESPA's holes from the March to November, 2010 program and most of the IGME holes had been drilled in the wrong direction. Holes drilled in the current program to extend mineralization laterally were thus drilled southerly. In general, these later holes intersected mineralization. The north dipping trend of the mineralized zones was confirmed. Assay values for approximately half of the intercepts listed in **Table 7** are greater than 0.50% Sn while some two thirds are more than 0.40% Sn.

IP anomalies in the central part of the survey area (**Figure 18**) correspond with known Oropesa mineralization. Other anomalies were drill tested with generally disappointing results. An anomaly located to the south was tested with 4 holes - ORPD-20, 24, 26 and 31. Shale was intersected in all 4 holes. Only minor pyrite was noted occurring in joints. All samples assayed very low for tin (mainly below detection levels) as well as for base metals and silver which often are associated with the tin mineralization. Holes ORPD-4, 6 and 30 tested strong linear anomalies located north of the known Oropesa mineralization. Conglomerates and shales were intersected but no sulphide or other mineralization of consequence.

In the SE sector of the property, holes (ORPD-9 and 11) tested for the source of the high grade Sn boulders (with assay values up to >5% Sn) that were submitted for the 2011 metallurgical scoping studies. ORPD-9, drilled to the SE to test the possibility that the

mineralization was associated with an interpreted NE trending structure, missed the mineralization. Follow-up hole ORPD-11, drilled to the SW, cut 13.9 m (199.5 - 213.4 m) with 1.08% Sn average grade (**Table 7**).

Information determined from MESPA's drill program at Oropesa include;

- ▶ The host lithological units, as interpreted from the available drill hole data, dip to the north shallowly at about 35 - 50° and not always to the south as indicated on the IGME geology maps for the entire property. This observation implies that the lithologies may be folded, possibly due to buckling resulting from the intrusion.
- ▶ The mineral intercepts also dip to the north shallowly at similar angles.
- ▶ The tin mineralization zones and structures clearly cut stratigraphy, and thus the tin mineralization is not syngenetic in origin.
- ▶ Tin mineralization occurs within several sub parallel zones.
- ▶ Half of the intercept assay values are greater than 0.50% Sn and some two thirds are more than 0.40% Sn.
- ▶ Massive and semi-massive sulphide mineralization, also of epithermal origin, overprint the tin mineralization. However, there is a direct correlation between the tin mineralization and sulphides. Such mineralization is traceable with geophysical instrumentation.
- ▶ Copper and zinc assays are locally significant. These metals might prove to be recoverable bi-products.
- ▶ Tin mineralization continuity was demonstrated by the section (**Figure 11**), although the grade of mineralization appears variable.
- ▶ The thickness of the oxidized zone is highly variable.

### **La Grana**

The fourteen (14) La Grana holes, LGR-1 to 14, were all exploratory in nature, and were designed to confirm and test various structures interpreted from a re-evaluation of the IGME data combined with the results of MESPA's prospecting sampling program. All were drilled at the La Grana West tin occurrence. Basic data regarding these hole are presented in **Table 10**, while assay intercepts are listed in **Table 8**. [Note that the assay interval lengths in **Table 8** are not an indication of the mineralization true thickness. True thickness can only be determined once

**TABLE 10**  
**MESPA : La Grana Tin Occurrences Drill Hole Data**

| Hole No.           | Date Drilled | Azimuth (mag) | Dip   | Length (m)     | x Coordinate* | y Coordinate* | Elevation (m) | Anomaly Tested |
|--------------------|--------------|---------------|-------|----------------|---------------|---------------|---------------|----------------|
| LGR-1              | 2010         | 175           | 45 S  | 136.25         | 282863        | 4245055       | N/A           | West           |
| LGR-2              | 2010         | 58            | 45 NE | 73.70          | 282846        | 4245195       | N/A           | West           |
| LGR-3              | 2010         | 51            | 80 NE | 78.70          | 282845        | 4245195       | N/A           | West           |
| LGR-4              | 2010         | 214           | 45 SW | 150.70         | 282863        | 4245058       | N/A           | West           |
| LGR-5              | 2010         | 209           | 60 SW | 104.40         | 282820        | 4244090       | N/A           | West           |
| LGR-6              | 2010         | 265           | 45 W  | 127.10         | 282928        | 4244797       | N/A           | West           |
| LGR-7              | 2010         | 305           | 45 NW | 176.20         | 282927        | 4244796       | N/A           | West           |
| LGR-8              | 2010         | 230           | 87 SW | 148.45         | 282902        | 4245069       | N/A           | West           |
| LGR-9              | 2010         | 60            | 45 NE | 175.80         | 282819        | 4245086       | N/A           | West           |
| LGR-10             | 2010         | 43            | 44 NE | 136.80         | 282581        | 4245081       | N/A           | West           |
| LGR-11             | 2010         | 45            | 65 NE | 168.50         | 282582        | 4245081       | N/A           | West           |
| LGR-12             | 2010         | 40            | 89 NE | 207.00         | 282583        | 4245081       | N/A           | West           |
| LGR-13             | 2010         | 43            | 45 NE | 153.30         | 282890        | 4244813       | N/A           | West           |
| LGR-14             | 2010         | 0             | 45 N  | 182.20         | 282887        | 4244812       | N/A           | West           |
| <b>MESPA Total</b> |              |               |       | <b>2019.10</b> |               |               |               |                |

\* European 1950 datum, zone 30 S : Measured with hand held GPS

sufficient sectional drilling has been carried out to define the geometry of the mineralized structure from which the true thickness can then be determined.]

Information determined from MESPA's drill program at La Grana West include;

- ▶ The style of tin mineralization at La Grana West is different from that at Oropesa.
- ▶ Tin mineralization occurs in zones of brittle fractures.
- ▶ Tin mineralization may be high grade, >1% Sn, and be very coarse grained.
- ▶ The zones / veins cored to date are <5 m thick and in most cases ,1 m thick.

## **SAMPLE PREPARATION, ANALYSIS AND SECURITY**

### **General**

The sample preparation, analysis and security procedures for the prospecting samples, the trench program samples and the core samples for the March - November, 2010 drill program were described in Burns (January, 2011). The sample preparation, analysis and security procedures for the December 2010 - July, 2011 drill program follow.

### **Sampling Method and Approach**

Some 2687 core samples (**Tables 7**) were selected, cut and assayed. Once the core was logged, the geologist marked out the samples to be cut. Sample lengths were nominally / normally 1.0 m in mineralized rock, but were varied as required due to **a)** oxidation intensity, **b)** fracture intensity, **c)** mineralization intensity, **d)** lithological contacts **e)** core recovery, and **f)** core diameter, and 2.0 m in non mineralized rock. Wherever possible sample lengths were adjusted to coincide with the end of a 3.0 m drill run. Intervals of lost core were excluded from any sample. Samples were cut in half using a saw equipped with diamond studded blades. Core cutting was carried out at MESPA's office / core logging facility in Fuente Obejuna by a person with more than 30 years experience. The facility is secure; there are locks on all doors and the windows are barred.

Sample quality in general is very good, however there are two factors that could impact the accuracy and reliability of results and thus introduce biases. Core recovery, the first such factor, was in general reasonably good, but in both oxidized and non oxidized material the recovery can

be highly variable due to the friable nature of the rock particularly in intensely fractured sections which are prone to breakage and grinding during the drilling process. The situation is exacerbated within the oxidized material as the rock has already been weakened. The remaining pieces of core may or may not be representative of the original full core. A second factor, already mentioned in the section titled “**MINERALIZATION**”, compounds the first. Particularly within the oxidized upper portion of the mineralized material and in the transition section to fresh rock, the almost total absence of sulphides and the presence of iron and manganese oxide minerals in fractures that in fresh rock contain abundant sulphides has led MESPA geologists to hypothesise that any encapsulated cassiterite grains within sulphide mineral would be freed once the sulphide minerals were destroyed by weathering and would then be susceptible to loss by the circulating drill water.

### **Sample Preparation**

All core samples were delivered by MESPA personnel to ALS Chemex’s sample preparation facility in Seville, Spain. Normally samples are submitted on a hole by hole basis, and the number of samples in any sample batch varied from ~35 to 155. Once received by ALS Chemex, the samples were first logged into the in-house LIMS tracking system, after which the samples were prepared according to procedure code “Prep 31”. In this procedure each sample is weighed, dried, and fine crushed to 70% -2mm. A 250 gm split of the crushed material is then pulverized to better than 85% <75  $\mu$  (microns). Samples were then shipped by bonded courier to the ALS Chemex laboratory in Vancouver, Canada for analysis. The Seville facility is ISO accredited.

No aspect of the sample preparation process was conducted by an employee, officer, director or associate of MESPA

### **Sample Analysis**

In Vancouver samples are assayed for tin according to method ME-XRF10 by which 0.9 gm of calcined sample pulp is mixed with 4.5 gm of tetraborate and 4.5 gm lithium metaborate and fused at 1100°C to produce a flat molten disc which is then analyzed by XRF spectrometry. The samples are also analyzed for a suite of 33 major and trace elements by method ME-ICP61. Any sample with an assay value that is over limits for Cu, Pb or Zn by method ME-ICP61 is re-assayed

by an appropriate method to determine a finite value.

ALS Chemex employs strict protocols for sample tracking and cleanliness, and use in-house standards and blanks for internal QA/QC purposes. ALS Chemex is ISO accredited for the method ME-ICP61 but not for tin assay by method ME-XRF10, but do preform this method by very strict protocols.

### **Quality Control**

Upon receipt of the assay certificates, F. Fimbres (metallurgical consultant to MESPA and project general manager) visually checks to ensure that the values for the ALS Chemex standards, blanks and duplicates inserted at the laboratory are within acceptable limits of their stated values (F. Fimbres, pers. comm.). As yet, MESPA has not included any of their own standards, duplicates or blank as quality control measures in any sample batch.

It is the Author's opinion that for the current exploration state the sampling, sample security, sample preparation and sample analysis procedures employed by MESPA concerning samples submitted to ALS Chemex have been adequate. For future drill programs, particularly for any program conducted to lead to a resource estimate, it is recommended that samples be submitted in batches of 35 with each batch to include one standard, one blank and one duplicate, the latter to be prepared and inserted by the sample preparation laboratory using the sample reject material of the previous sample. Results for these control samples are to be diligently tracked.

### **DATA VERIFICATION**

As an independent check of the ALS Chemex assays, 31 samples were selected by the Author for check assays. Fifty (50) gram splits of pulp for 16 samples plus 100 gram splits of rejects for an additional 15 samples were submitted to Activation Laboratories Ltd. (Actlabs) in Ancaster, Ontario for assay by fusion XRF (Actlabs code 8-XRF). By this method, 0.2000 grams of -200 mesh sample pulp is fused with 49.75% lithium metaborate, 49.75 lithium tetraborate and 0.5% lithium bromide flux in Pt-Au crucibles using an automatic fluxer. The molten liquid is cast into fused glass disks. The tin content is determined using an AXIOS XRF Spectrometer. Actlabs is ISO accredited for this method.

The Actlabs check assay results are listed along with the original assays in **Table 11**. In general, the assays check very well. Of the 31 samples, 8 had a difference of 0%, 11 varied by <10%, 9 differed between >10% to <20%, while only 3 varied by >30%. The Actlabs results are in general lower (17 lower, 6 higher and 8 no difference). A significant difference between the laboratories was obtained for only one sample of higher grade, ORPD11-055; 1.17% Sn by ALS Chemex and 0.621% by Actlabs, a difference of -47%. The reason(s) for the difference are not clear but may be due to in-homogeneity of the sample or the fact that ALS Chemex use 0.9 grams of sample in their assay procedure while Actlabs uses 0.2 grams. It is the Author's opinion that the assay data acquired may be relied upon.

## **MINERAL PROCESSING AND METALLURGICAL TESTING**

Mineral processing and metallurgical testing studies have been conducted by IGME & MESPA. Those by IGME are discussed in the “**EXPLORATION HISTORY**” section of this report and in more detail in Burns, 2010, Appendix IV.

In 2009, MESPA completed an internal review of the mineralogical studies & metallurgical test work undertaken by IGME and concluded (P. Miller, pers. comm.);

- ▶ Major advances had been made in tin recoveries in the approximate 20 years since the IGME studies and test work.
- ▶ The tin grade used for the 1988/89 metallurgical test work was 0.284% Sn. This grade was the approximate average figure estimated for the Sn resources in the late 1980s. In 2009/10 terms, this figure of 0.284% Sn was more likely to be closer to an economic cut-off grade as opposed to an average resource grade.
- ▶ Visible cassiterite can be seen in Oropesa deposit drill core with the aid of a 16x lens.
- ▶ Comments by IGME personnel (to P. Miller and the Author) indicated that the quality of the 1988/89 test work by the laboratories in Madrid was poor due to the lack of proper equipment.

Based upon this internal review, MESPA decided to;

- ▶ Undertake metallurgical test work on both oxidized and non oxidized drill core from Oropesa tin deposit to confirm, deny or amend the findings of the previous IGME sponsored 1988/89 test work;

Table 11 : Check Assays - Comparative Results

| Sample Number | Original Assay - ALS Chemex (A) | Check Assay - Actlabs (B) | % Difference (B-A)/A x 100 | Sample Number | Original Assay - ALS Chemex (A) | Check Assay - Actlabs(B) | % Difference (B-A)/A x 100 |
|---------------|---------------------------------|---------------------------|----------------------------|---------------|---------------------------------|--------------------------|----------------------------|
| 1655414       | 0.15                            | 0.154                     | 0                          | ORPD11-035    | 0.23                            | 0.163                    | -30.4                      |
| 1655415       | 0.18                            | 0.162                     | -11.1                      | ORPD11-036    | 0.04                            | 0.065                    | +75.0                      |
| 1655416       | 0.22                            | 0.193                     | -13.6                      | ORPD11-037    | 0.65                            | 0.686                    | +6.2                       |
| 1655417       | 0.22                            | 0.224                     | 0                          | ORPD11-038    | 0.18                            | 0.188                    | +5.6                       |
| 1655418       | 0.11                            | 0.106                     | 0                          | ORPD11-039    | 0.71                            | 0.583                    | -18.3                      |
| 1555419       | 0.26                            | 0.249                     | -3.9                       | ORPD11-040    | 0.29                            | 0.288                    | 0                          |
| 1655420       | 1.93                            | 1.900                     | -1.6                       | ORPD11-041    | 0.26                            | 0.258                    | 0                          |
| 1655421       | 0.29                            | 0.284                     | -3.4                       | ORPD11-042    | 0.30                            | 0.251                    | -16.7                      |
| 1655422       | 0.09                            | 0.088                     | 0                          | ORPD11-043    | 0.20                            | 0.197                    | 0                          |
| 1655423       | 0.47                            | 0.409                     | -12.8                      | ORPD11-044    | 0.36                            | 0.301                    | -16.7                      |
| 1655424       | 0.40                            | 0.339                     | -15.0                      | ORPD11-055    | 1.17                            | 0.621                    | -47.0                      |
| 1655425       | 0.35                            | 0.340                     | -2.9                       | ORPD11-056    | 1.70                            | 1.82                     | +5.9                       |
| 1655426       | 0.34                            | 0.283                     | -17.6                      | ORPD11-057    | 3.40                            | 3.52                     | +2.9                       |
| 1655427       | 0.75                            | 0.689                     | -8.0                       | ORPD11-058    | 1.48                            | 1.38                     | -6.8                       |
| 1655428       | 1.01                            | 0.854                     | -15.8                      | ORPD11-059    | 0.64                            | 0.674                    | +4.7                       |
| 1655429       | 0.27                            | 0.272                     | 0                          |               |                                 |                          |                            |

For the % difference calculations the Actlabs values were rounded to 2 decimal points.

- ▶ Conduct such additional test work on higher grade material than that used by IGME; and
- ▶ Undertake such additional metallurgical test work at a laboratory with a proven record in tin metallurgy.

MESPA has conducted two preliminary programs of metallurgical test work and associated studies; the first in 2009 and the second in 2011. For both programs the test work was contracted to SGS laboratory located at Truro, Cornwall, UK. Test work completed in 2009 focussed upon the amenability of the mineralization to gravity separation techniques. The two samples chosen had the following characteristics as displayed in **Table 12**.

**Table 12**  
**MESPA 2009 Metallurgical Samples**

| Sample # | From | To  | Type         | Tin Grade | Tungsten Grade |
|----------|------|-----|--------------|-----------|----------------|
| OR - 11  | 188  | 192 | Non Oxidized | 0.46%     | 0.08%          |
|          | 204  | 212 | Non oxidized |           |                |
| OR - 27  | 15   | 23  | Oxidized     | 1.66%     | 0.03%          |

A complete summary description of the test work undertaken may be found on Burns (January, 2011). Results of the 2009 test work are as follows;

- ▶ There was no preferential grinding of tin nor sliming of tin in either sample tested.
- ▶ The liberation of cassiterite is not a problem in the finer sized particles of either sample tested.
- ▶ Both samples would respond to a typical plant approach with multi stage grind / separation stages to remove free cassiterite at the earliest opportunity.
- ▶ Due to the presence of sulphide minerals, un-oxidized material may require a sulphide pre-float prior to gravity concentration.
- ▶ Wolframite may prove to be a valuable by-product.

- ▶ Recoveries and grade for the oxidized material were high, especially for the -75 $\mu$  fraction. There was no concentration in the finest fraction (-45 $\mu$ ) as had been feared.

Results are positive for both samples, and indicate that the both the oxidized and non oxidized material can indeed be concentrated by conventional gravity techniques. [*Note: This finding is in direct contrast to the conclusions reached previously by IGME. Possible explanations are that at the time IGME was not properly equipped to conduct the necessary test work (J. Montero, pers. comm.), and that in the intervening 20 years there have been significant developments in gravity separation techniques.*]

A **second program** of scoping test work was conducted in early 2011 (Goldburn and MacDonald, 2011) as a follow-up to the work completed in 2009. Three samples of non bedrock gossan material collected from surface towards the eastern end of the Oropesa mineralized area (**Table 13**) were submitted for test work to determine the amenability of pre-concentrating tin by gravity means on coarser sized fractions relative to the fractions studied in the 2009 tests. All three samples were completely oxidized and contained no sulphide minerals.

**Table 13 : MESPA 2011 Metallurgical Samples**

| Sample #    | Weight (kg) | Head Grade % Sn |
|-------------|-------------|-----------------|
| ORP-J994527 | 10.729      | 5.00            |
| ORP-J994528 | 6.025       | 2.52            |
| ORP-J994529 | 4.715       | 0.87            |

Upon receipt, the samples were logged into the SGS system, dried and then individually crushed to 100% <6.3mm. The testing program involved two phases; heavy liquid test work and gravity release analysis. Summaries of procedures and results follow.

The **heavy liquid test work** was conducted on two size fractions, -6.3+3.35mm and -3.35+1mm using a heavy liquid with a 3.3/cm<sup>3</sup> density. This produced four products per sample;

2 sinks (heavy) fractions and two floats (light) fractions. The results suggest that pre-concentration would be effective at both size fractions for sample ORP-J994527, but only for the -3.35+1.00mm fraction for sample ORP-J994528, but would not be effective for sample ORP-J994529.

**Gravity release analysis** was conducted on size fractions -1.00mm+250 $\mu$ , -250+75 $\mu$  and -75 $\mu$ . The results showed that **a)** concentrate grades of 55% Sn are achievable for the middling (-250+75 $\mu$ ) fraction for all three samples, **b)** that recoveries of 72% were achievable with a 60% mass reduction, and **c)** that in general recovery was lower with lower head grades.

SGS recommended

- ▶ that future test work be conducted on representative samples of core material;
- ▶ assaying the concentrates for Ti, Fe, As and possibly base metals to investigate what other materials are also being upgraded and which might be marketable;
- ▶ the completion of full dense media separation studies using heavy liquids with densities of 2.65 to 2.95 gm/cm<sup>3</sup> to investigate the full release data of the coarse size fractions; and
- ▶ the use of magnetic separation to remove iron.

## **MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

MESPA has not as yet completed a resource estimate for the Oropesa tin deposit.

Whether a formal or informal resource / reserve estimate was completed for the Oropesa tin deposit is unknown. There are various figures attributed to IGME quoted in the literature (**Table 14**), but the source report(s) and / or raw data used in the estimates are not available. Therefore, such basic data as cut-off grade, specific gravity, drill hole area of influence, method used for the estimation (sectional, Krieging), etc. are unknown and cannot be cross checked or otherwise validated. **As such, the author was able to verify the numbers quoted nor classify them according to CIM definitions. Thus, the estimates SHOULD NOT BE RELIED UPON.** They are included herein as background material, and at most should be considered only as possible orders of magnitude estimates.

**Table 14**  
**Oropesa - Summary of Resources Estimates in the Literature**

| Source                  | Reference             | Estimate                                    |
|-------------------------|-----------------------|---|
| Lopez-Pamo et al, ~1990 |                       | 16Mt @ 0.25% Sn including<br>8Mt @ 0.40% Sn |
| Locutura et al., 1990   | IGME, 1987            | >10Mt @ 0.25% Sn                            |
| Tornos et al., 2004a    |                       | 18Mt @ 0.25% Sn                             |
| Tornos et al., 2004b    | Locutura et al., 1990 | 18Mt @ 0.28% Sn                             |

Note : Whether the estimates quoted are geological resources or based upon an open pit or underground mining configuration is not know

No deposit has been delineated at either La Grana West or La Grana East areas, and consequently no mineral resources have been estimated.

### ADJACENT PROPERTIES

Except for regional geological considerations, all data reported herein are for the Oropesa PI #13.050 property.

### OTHER RELEVANT DATA AND INFORMATION

To the Author's knowledge, all relevant data are included in this report.

### INTERPRETATION AND CONCLUSIONS

MESPA has continued to enhanced the understanding and evaluation of the Oropesa property.

- ▶ The preliminary basic metallurgical test work conducted by MESPA in 2009 and 2011 successfully showed that the tin mineralization at Oropesa in both oxidized and non oxidized material may be concentrated by conventional gravity techniques. This is a direct contradiction of the original very negative conclusions resulting from the IGME metallurgical studies. Additional scoping studies are required to determine, amongst others, optimum grind size, the possible presence of any deleterious elements or any significant bi-products that may concentrate with the tin.
- ▶ MESPA has developed and continues to refine a workable geological model for the emplacement of the tin mineralization. The model will aid MESPA in the planning of exploration programs and the interpretation of results therefrom.

- ▶ The re-interpretation of the geophysical data by MESPA led to the recognition that the mineralized structure at Oropesa is detectable and definable by conventional IP / resistivity surveys. The IP/resistivity survey conducted in 2011 by MESPA confirmed the usefulness of the methodology. Regardless of the fact core holes drilled to test certain identified did not intersect tin mineralization, the prudent use of the methodology provides MESPA with a geophysical exploration tool by which to explore not only the environs of the Oropesa deposit and extensions thereto, but also the La Grana occurrences and the remainder of the property as well, particularly those areas with little or no outcrop. A thorough review of the geophysical data by an independent geophysicist is required.
- ▶ The core review and petrological examination of selected samples by Roger Taylor, a recognized authority on tin deposits, has provide MESPA with extremely valuable information as to the genesis of the deposit. Such information will aid the interpretation of data, the planning of future drill programs and also future metallurgical test work.
- ▶ The lack of a marker horizon in the stratigraphic sequence plus the numerous faults of undetermined orientation and movement noted in the core complicates the geology at Oropesa and poses a challenge to the geological interpretation.
- ▶ From the drilling completed to date, MESPA has established that a) as suspected the mineralization is structurally controlled, b) mineralization is preferentially developed in the arenite and conglomerate units rather than the shale beds, c) the lithologies dip shallowly northward at 35 to 50° and not universally to the south as depicted on the maps produced by IGME, d) the mineralized zones dip steeply northward at similar angles, and e) although the tin mineralization may not have been deposited in the same stage as the massive and semi massive sulphides the two have a direct correlation,
- ▶ At Oropesa, MESPA has intersected tin mineralization in core holes over a distance >1300 m. As shown in **Table 7** some two thirds of the intercepts average greater than 0.40% Sn, and most are over significant lengths. These holes will be the basis from which MESPA can step out with the intent to develop tonnage.

## **RECOMMENDATIONS**

This property is at the early to mid exploration / evaluation stage. The following recommended two phased exploration program, if implemented, will effectively advance the property towards a better understanding as to the style(s) and control(s) of mineralization on the property in particular, and of its economic potential in general. Sufficient data should be available at the end of the program proposed herein to a permit resource for the Oropesa tin deposit to be estimated. With the distinct possibility for future mine development, the commencement of an

environmental baseline study is included as part of the exploration program. The implementation of all or any part of **Phase II** is dependent upon the results for **Phase I**.

### *Phase I*

#### ■ **Geophysics**

Quality, state of the art data were acquired from the recent IP/resistivity and magnetic surveys. Drill results for some anomalies tested proved problematic as no mineralization was cored nor could the anomalies be explained. It is recommended that an independent geophysicist be contracted, preferably one with tin deposit experience, to review the geophysical data and core to determine which anomalies might be tin bearing.

#### ■ **Drilling**

The central core area of tin mineralization is to be drilled in a regular grid pattern with 10 holes per line/fence spaced 25 m apart on lines 50 m apart. This will involve 15 fences (two are already complete) for some 150 holes with an average depth of 250 m. Allow for an additional 10 to 15 holes to explore the deposit to depth or to test anomalies; cumulative meterage 40,000 m. To save time and money, portions of the holes (assume about half of the total meterage) are to be drilled by reverse circulation and remainder as core.

When sampling core, samples are to be taken from any zones of cassiterite and/or sulphide mineralization, of iron and/or manganese coated fractures, of hydrothermal alteration, etc. The nominal sample length should continue to be 1.0 m while the maximum sample length should be 1.5 m. Sample intervals are not to cross lithological, structural or alteration contacts. Samples of the reverse circulation cuttings are to be a standard 1.0 m length. Assay protocols currently in use by MESPA are to be continued. **A rigorous QA / QC program that includes standards, duplicates and blanks is to be followed.**

For both oxidized and non oxidized material, rock density data are to be determined utilizing representative pieces of core. Initially, data are to be collected for either each 3 m of core or for every sample within the mineralized zone and every 4<sup>th</sup> 3 m core interval in waste. The number of determinations may be lowered / adjusted once patterns emerge. Since the oxidized core may crumble when immersed in water, and since there are numerous open fractures, veins and vugs in the core, coating the core with wax will be required.

Hole directions are to be determined at maximum intervals of 30 m by Reflex or some other suitable instrumentation while the hole is in progress. At the completion of the drill

program, all holes, including those previously drilled (if possible), are to be surveyed by gyroscopic instrumentation.

Drill hole collars are to be accurately surveyed for their x, y and z coordinates, preferably by theodolite or differential GPS. At the same time, the collar locations for previous holes are to be similarly surveyed, and if possible collar azimuths verified.

- **Mining Engineer**

It is expected that sufficient data will be available at the end of this current phase of work to allow a resource estimate to be undertaken. To that end, a mining engineer is to be engaged, preferably by the same person who will provide the estimation, to familiarize himself with the project and to consult with the site geologists to ensure that all data required for the resource estimate is being collected.

- **Metallurgical Test Studies**

Additional metallurgical scoping test studies are to be undertaken on representative samples of Oropesa oxide and non oxide material to determine an optimum process for producing a saleable tin concentrate at acceptable recovery rates. Test work should be more detailed than that previously undertaken and should concentrate on conventional gravity plus flotation techniques. Work is to be conducted on large diameter (PQ) core.

- **Environmental Baseline Studies**

The property and general area is used for farming of various crops. Since arsenopyrite is found with the tin mineralization and since semi massive and massive sulphide mineralization overprints the tin mineralization, it is essential to commence environmental baseline studies as soon as possible particularly for water quality. A company with a proven history and experience with the Spanish requirements with respect to mining operations is to be hired to conduct these studies.

## ***Phase II***

- **Drilling**

To further expand the deposit, another 50,000 m of drilling are to be completed, ~1/3 as core (17,000 m) and 2/3 as reverse circulation (33,000 m). All protocols and procedures established in Phase I are to be continued.

- **Metallurgical Test Studies**

Follow-up metallurgical test work is to be performed on larger samples to confirm and / or improve upon the results from the scoping studies obtained in **Phase I**. It is probable that

additional PQ drill core will be required.

■ **Resource Estimate**

A resource estimate is to be completed for the Oropesa deposit using all relevant available information. The estimate is to be undertaken by someone familiar with epithermal tin deposits.

■ **Airborne Survey**

The structural geology of the property is complex. Various fault orientations are suspected. A combined magnetic and electromagnetic helicopter airborne survey is to be flown over the property at close line spacings and as low as safely possible to obtain basic data required for a structural interpretation. Since massive and semi massive sulphides are associated with the tin mineralization, other potential tin targets may be developed as well. An independent geophysical consultant is to be engaged to set the parameters for the survey, monitor the survey while in progress and interpret the results.

■ **Environmental Baseline Studies**

Environmental baseline studies commenced in Phase I are to be continued and to include all data pertinent to mine development in Spain.

The total costs for the recommended program, as detailed in **Table 15**, are € **4,800,000.00** (\$6,480,000 CDN) for **Phase I**, and € **6,300,000** (\$8,505,000 CDN) for **Phase II**.

Respectfully submitted,



James G. Burns B.Sc., P.Eng.

Effective Date : August 16, 2011

Signing Date : August 17, 2011

**TABLE 15**  
**PROPOSED EXPLORATION BUDGET**

| <b>PHASE 1</b>   | <b>€ Euros</b>       | <b>\$ CDN.</b>       |
|--|----------------------|----------------------|
| Core drilling : 20,000 m @ €107/m (includes core cutting)    | 2,140,000.           |                      |
| Reverse circulation drilling : 20,000 m @ € 55/m             | 1,100,000.           |                      |
| Assays : allow 8,000 @ €35/ea                                | 280,000.             |                      |
| Density measurements : allow 2000 @ €5/ea                    | 10,000.              |                      |
| Drill hole collar plus down hole directional surveys : allow | 10,000.              |                      |
| Metallurgical scoping test studies : allow                   | 450,000.             |                      |
| Senior geologist + 3 geologists : 6 months @ €12,000/mo      | 72,000.              |                      |
| Project manager : 6 months @ €7,000/mo                       | 42,000.              |                      |
| Geophysical consultant : allow                               | 25,000.              |                      |
| Mining Engineer : allow                                      | 25,000.              |                      |
| Environmental baseline studies : allow                       | 100,000.             |                      |
| Transportation - air and ground : allow                      | 30,000.              |                      |
| Room & board : 6 months @ €5,000/m                           | 30,000.              |                      |
| Reporting : allow  | <u>10,000.</u>       |                      |
| Sub Total  | 4,324,000.           |                      |
| Contingency (11%)  | <u>476,000.</u>      |                      |
| <b>Total</b>   | <b>€ 4,800,000.</b>  | <b>\$6,480,000.</b>  |
| <b>PHASE 11</b>  |                      |                      |
| Core drilling : 17,000 m @ € 107/m                           | 1,819,000.           |                      |
| Reverse circulation drilling : 33,000 m @ €55 /m             | 1,815,000.           |                      |
| Assays : allow 10,000 @ € 35/ea.                             | 350,000.             |                      |
| Density measurements : allow 2000 @ € 5/ea                   | 10,000.              |                      |
| In hole gyroscopic survey : allow                            | 20,000.              |                      |
| Drill hole collar survey : allow                             | 15,000.              |                      |
| Metallurgical test studies : allow                           | 1,000,000.           |                      |
| Resource estimation and report : allow                       | 150,000.             |                      |
| Airborne survey (includes an independent consultant) : allow | 250,000.             |                      |
| Environmental baseline studies : allow                       | 100,000.             |                      |
| Senior geologist + 3 project geos : 8 mo. @ € 12,000/mo.     | 96,000.              |                      |
| Project manager fees : 8 months @ €7,000/mo                  | 56,000.              |                      |
| Transportation - air and ground : allow                      | 25,000.              |                      |
| Room & board : 8 mo @ € 5000/month.                          | 40,000.              |                      |
| Reporting : allow  | 10,000.              |                      |
| Miscellaneous : allow  | <u>25,000.</u>       |                      |
| Sub Total  | 5,781,000.           |                      |
| Contingency (9%)   | <u>519,000.</u>      |                      |
| <b>Total</b>   | <b>€6,300,000.</b>   | <b>8,505,000.</b>    |
| <b>Grand Total Phase I &amp; II</b>                          | <b>€ 11,100,000.</b> | <b>\$14,985,000.</b> |

Conversion rate : € 1.00 = \$1.35 CDN.

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**CERTIFICATE  
FOR  
JAMES G. BURNS**

I, James G. Burns, P.Eng., do hereby certify that:

1. I am currently self employed as a geologist and reside at :  
405 Geraldine Street  
Shediac, New Brunswick, Canada.  
E4P 1T3
2. I graduated with a B.Sc. Degree in Geological Sciences (Honours) from Queen's University in 1969.
3. I am a member of the Association of Professional Engineers of Ontario.
4. I have worked as a geologist for a total of 41 years since my graduation from university. I have worked on tin exploration projects in New Brunswick, Nova Scotia and Newfoundland.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purpose of NI 43-101.
6. I am responsible for the preparation of this technical report titled "NI 43-101 Technical Report for the Oropesa Property, Cordoba Province, Region of Andalucia, Spain" and dated August 17, 2011 (the Technical Report).
- 7) I visited the property and core logging facilities at various times between August 4 and August 10, 2011 Previously, I had visited the property in April, 2008, and in March 2010. Other than the previous property visits, I have not had prior involvement with the property that is the subject of this Technical Report.
- 8) As of the date of this certificate, I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission of which makes the Report misleading.
- 9) I am independent of the issuer applying all of the test in Section 1.5 of National Instrument 43-101.
- 10) I have read National Instrument 43-101 and Form 43-101F, and the Technical Report has been prepared in compliance with that instrument and form.
- 11) I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and the publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.



Effective Date : August 16, 2011  
Signing date : August 17, 2011

James G. Burns B.Sc., P.Eng.

**APPENDIX 1**

Letter of Authorization

# **Eurotin Inc.**

**320 Bay Street, Suite 1600  
Toronto, Ontario M5H 4A6**

**Phone: 416.644.9964 Fax: 416.368.0300**

July 25<sup>th</sup> 2011

Mr James G Burns, P. Eng  
405 Geraldine Street  
Shediac  
New Brunswick E4P 1T3  
Canada

Dear James

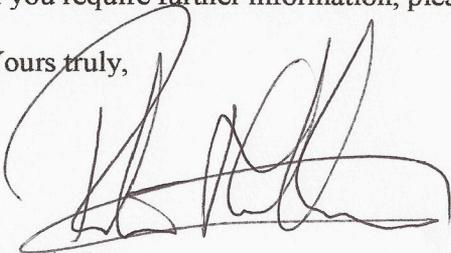
**Re: Oropesa Prospect**

On behalf of Eurotin Inc. ("Eurotin"), I hereby authorise you, as a Qualified Person under the regulations of National Instrument 43-101, to prepare a technical report on the Oropesa Project, the principal Spanish property of Eurotin's wholly owned subsidiary Minas de Estaño de España SL. The report should contain whatever recommendations for further work you consider appropriate as a best industry practice to explore the mineral potential of this property.

The purpose of this report is to support documents, such as a prospectus, which may be required by the Canadian regulatory authorities to support a recent special warrant financing by Eurotin.

If you require further information, please contact the undersigned.

Yours truly,



Eurotin Inc.  
Peter M. Miller  
President & CEO

**APPENDIX II**

Notes Re: November 2010 Property Visit

## **Oropesa : Notes re August 2011 Property Visit**

August 4<sup>th</sup>

- ▶ Accompanied by P. Miller, and geologist Victor Guerrero Merino and Jairo Gomez Florido travelled to the Oropesa area. Three drills were in operation. Reviewed the drill core at site and discussed the program.
- ▶ Drove to MESPA's office and core logging facility in Fuente Obejuna. Met with Francisco Fimbres and discussed various aspects of the project including the most recent metallurgical test work, check assay procedures and the environmental baseline study that MESPA intends to commence.

August 5<sup>th</sup>, 8<sup>th</sup> - 11<sup>th</sup>

- ▶ At several times, reviewed core in Fuente Obejuna, discussed the core logging and data collection procedures or discussed various aspects of the exploration program with geologists Victor Guerrero Merino, Jairo Gomez Florido and Francisco Canabate Marquez.

August 6<sup>th</sup> and 7<sup>th</sup>

- ▶ At several times met with Peter Miller and discussed geology of the Oropesa area in general and of the deposit area in particular, the petrographical studies completed by Roger Taylor, and the mineralization genesis.
- ▶ Also discussed plans for the continuation of the exploration program.