

# LABORATORY

## SERVICES

TECHNICAL REPORT

# CORE MINERAL EXAMINATION AND ACID SOLUBILITY

**Paramount Resources Ltd.**

**Location(s):**

G-21-60-20N-117-30W

**Formation:**  
**Sulphur Point**

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## SUMMARY

Core samples from the Sulphur Point formation were submitted to characterize the rock matrix and identify the soluble rock species present.

## CONCLUSIONS

- The selected core samples from the Sulphur Point formation are impure dolomites. See scanning electron microscope (S.E.M.) analysis section for core descriptions.
- The acid solubility of the core samples in 15% hydrochloric acid (HCl), after 60 minutes at 22°C were >99%, the analysis confirmed that the core is predominantly of dolomite with small amounts of limestone ( $\text{CaCO}_3$ ) and calcium sulphate ( $\text{CaSO}_4$ ).

Lab Sample No.Sample Description

P-11107A

Core, 1424.1m, G-21-60-20N-117-30W

P-11107B

Core, 1430.0m, G-21-60-20N-117-30W

## HYDROCHLORIC ACID SOLUBILITY ANALYSIS

Solubility of a two-gram portion from each of the drill cutting and core samples was determined gravimetrically using 200 ml of 15% hydrochloric acid. The submitted samples were allowed to react for 60 minutes at room temperature (22°C). The acid filtrate from the 15% hydrochloric acid solubility was analyzed to determine the soluble species present. Results are summarized in Table #1 along with the molar carbonate ratio (Mg/Ca). The ratio gives a measure of the degree of dolomitization of the carbonate. Pure limestone ( $\text{CaCO}_3$ ) = 0.0, pure dolomite ( $\text{CaCO}_3\text{,MgCO}_3$ ) = 1.0, and the presence of magnesite ( $\text{MgCO}_3$ ) = > 1.0.

**Table #1**

Sample #	Analyzed Element (wt%)				Calculated Composition (wt%)				Molar Ratio (Mg/Ca)	Soluble (wt%)
	Ca	Mg	Fe	$\text{SO}_4$	$\text{CaCO}_3$	$\text{MgCO}_3$	$\text{FeCO}_3$	$\text{CaSO}_4$		
P-11049A	19.2	10.9	0.06	1.12	46.9	37.8	0.13	1.58	0.96	99.8
P-11049B	21.9	11.8	0.08	1.67	52.3	40.9	0.18	2.37	0.92	99.5

## **SCANNING ELECTRON MICROSCOPE ANALYSIS**

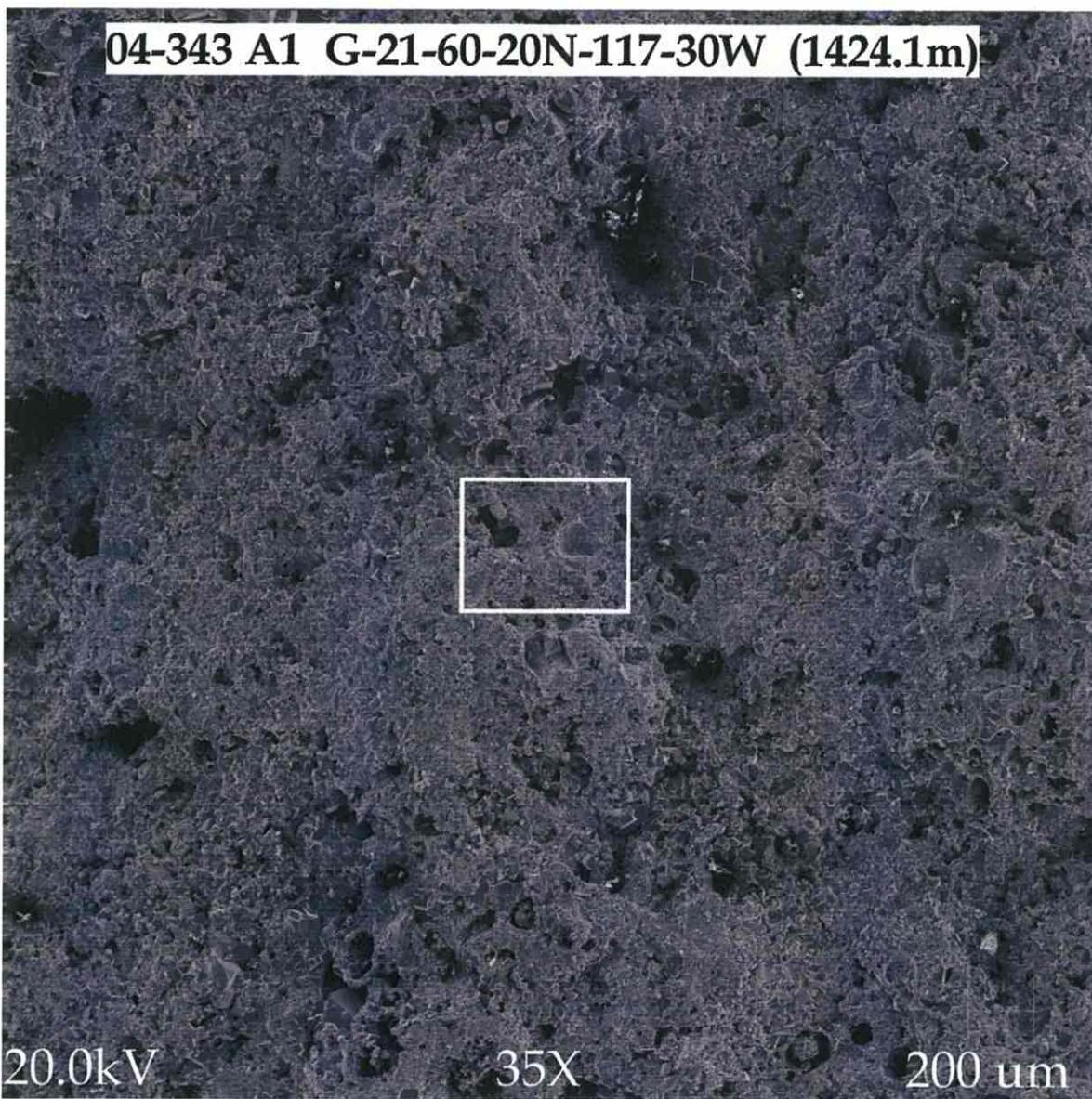
Core samples were freshly fractured and the surface of each of the core pieces was examined using a scanning electron microscope (SEM) equipped with an electron dispersive x-ray probe (EDX).

Samples were found to be mostly dolomite, with very fine (5-10 microns) to fine (50-100 micron) crystalline dolomite. The matrix is held together by compaction. There is also the presence of micritic dolomite throughout the core. Small amounts (>2.5%) of calcium sulphate and trace amounts (<0.5%) of  $Fe_xS_y$ , and silicates are also present in the matrix.

The primary porosity can be described as medium to low, although there are multiple vugs visible the porosity lowers due to the tight nature and the very fine crystalline dolomite.

The acid insoluble residue is predominantly potassium aluminum silicates. These may act as insoluble residue following acid treatment and may cause some plugging.

**SEM MICROGRAPHS**



Picture of sample P-11107A (04-343A) at 35X showing the medium to low porosity of the core. Image is enlarged on following page.

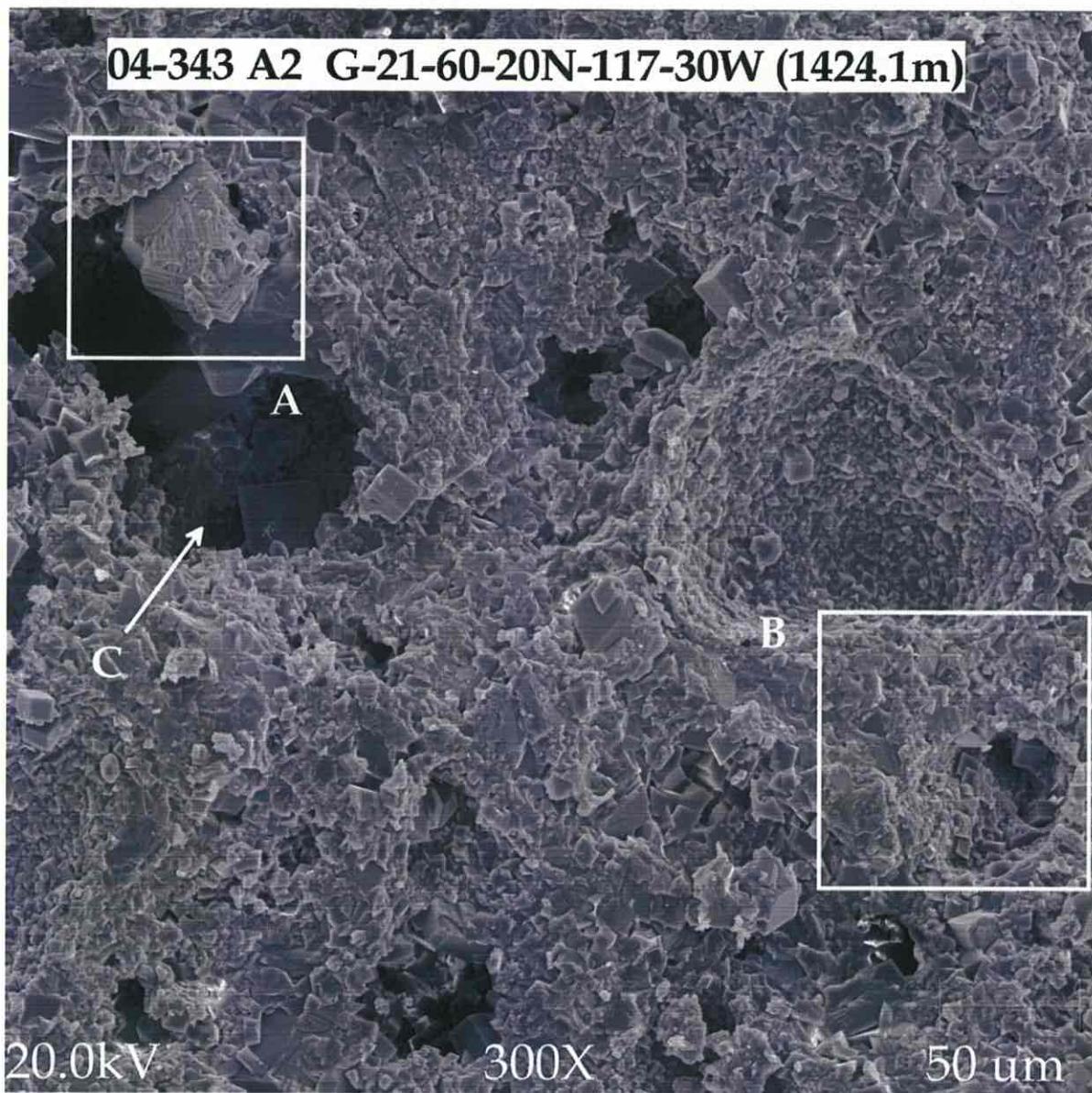
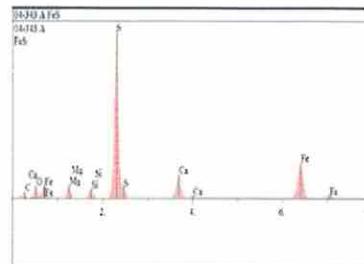
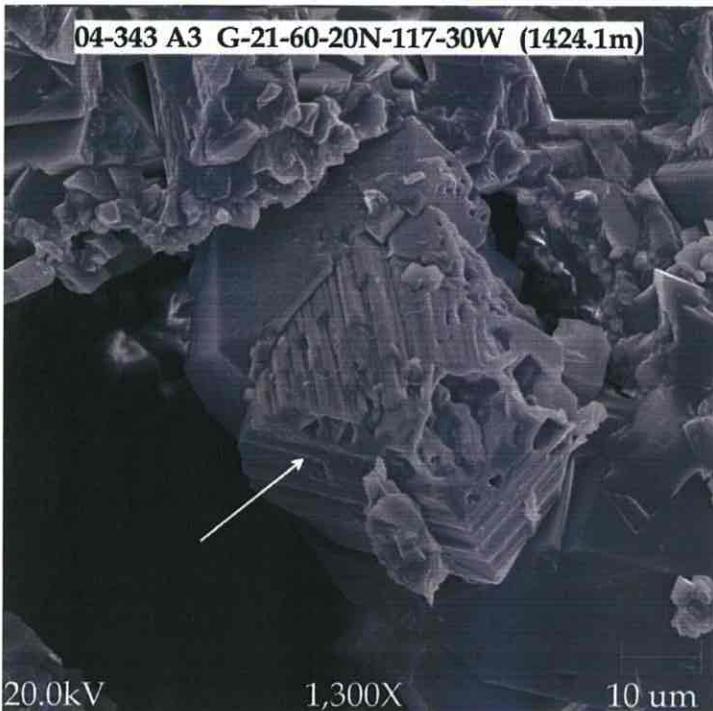


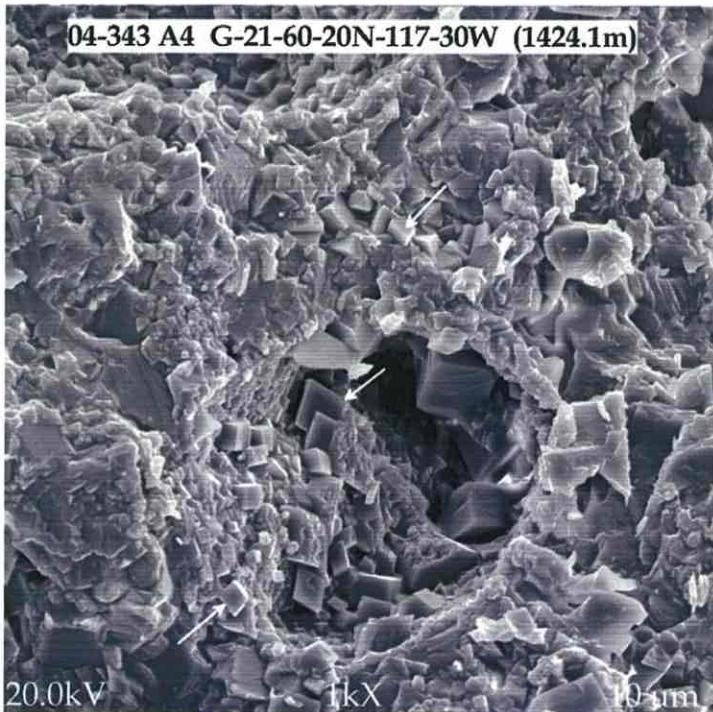
Image of sample 04-343A at 300X showing FexSy crystal (Box A) and shallow vug (Box B) and a deeper vug (arrow C).

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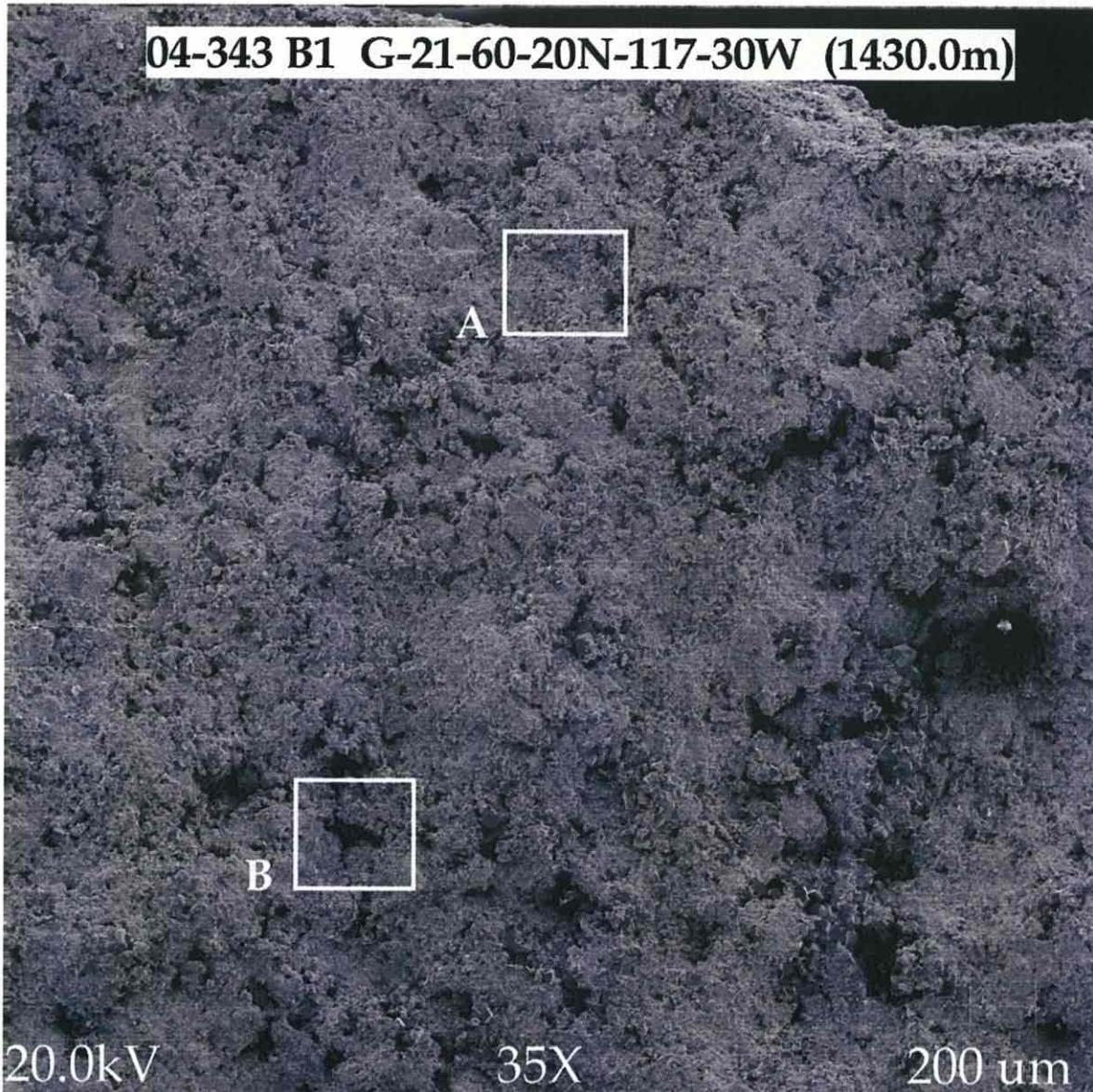


Top Left: Photograph of the Box A at 1,300X to show an area containing an  $Fe_xS_y$  crystal (arrow).

Bottom Left: Photograph of Box B to 1,000X to show the dolomite compaction and micritic dolomite crystals (arrows) lining a shallow vug.

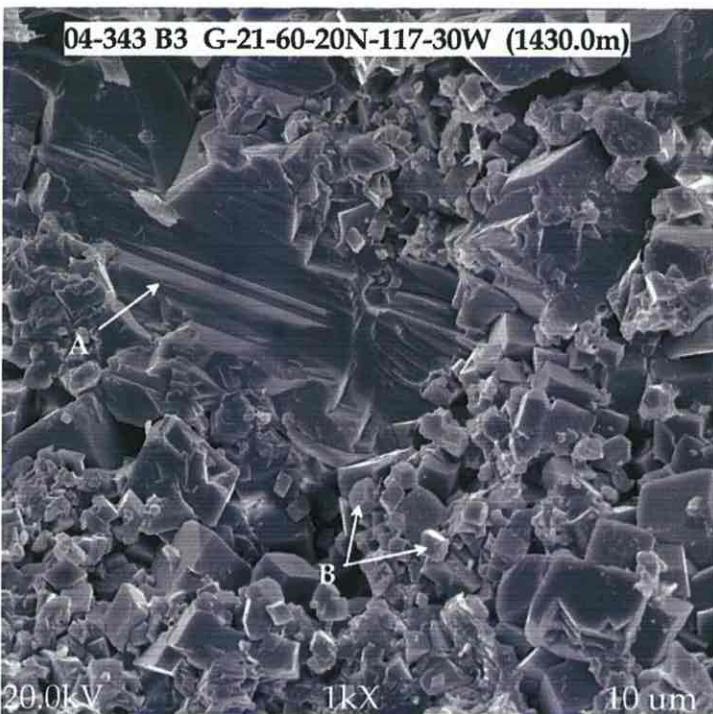
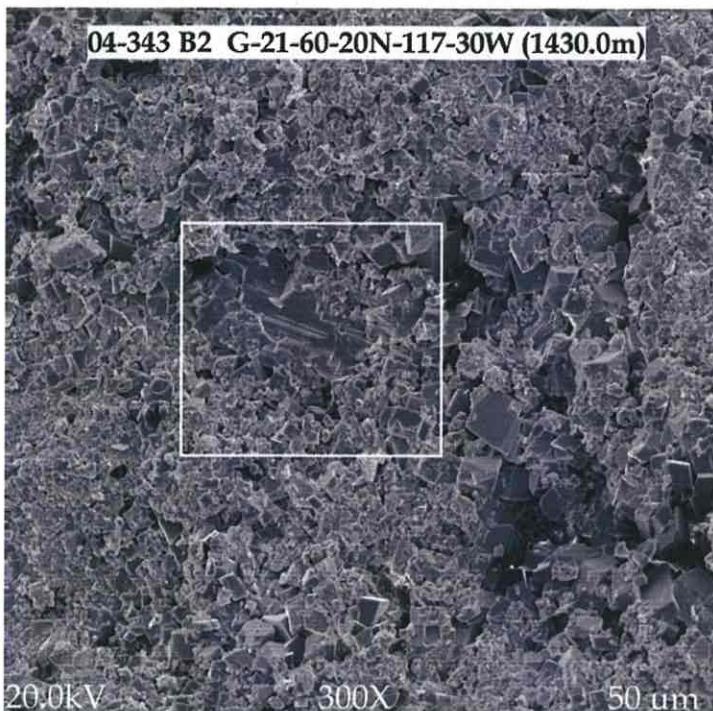


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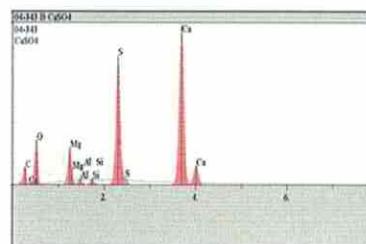
Picture of sample P-11107B (04-343B) at 35X to show medium to low porosity of the core. Box A is enlarged on following page and Box B is enlarged on page 9.

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Top Left: Photograph of the rock matrix at 300X showing an area containing Calcium Sulphate crystal.

Bottom Left: The same area enlarged to 1,000X to show the structure of the Calcium Sulphate (arrow A). Also shown are the micritic dolomite crystals (arrows B).



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Image of P-11107B at 300X to show dolomite crystals lining inner surface of vug (arrow).