

so with selective mining calc-silicates can probably be largely eliminated, and a relatively pure wiggilite product mined. This relatively pure wiggilite possibly would have more tin in a recoverable form.

To resolve the tin problem work needs to be done on a purer bulk sample of wiggilite. Such a bulk sample was prepared for investigation by the Department of Mines.

(c) Pyrohydrolysis

Amdel have a method of extracting fluorite by pyrohydrolysis a process which yields HF using steam as the only reagent. When approached by us they suggested that trials be carried out. (Appendix 29A). No such work has yet commenced but it is recommended.

C. DEPARTMENT OF MINES INVESTIGATIONS.

(a) Exploratory project, investigation R 731:

Sample type and analyses

A sample of wiggilite uncomplicated by the presence of calc-silicate rocks was submitted to the Department of Mines for investigation. The sample was a 140 kg parcel of wiggilite made up of cobbles and boulders selected off the dump about 50 m NNE of the old main shaft of the Shepherd and Murphy Mine, and off a bulldozer costean spoil heap immediately adjacent to the old main shaft.

An analytical comparison of the bulk samples submitted to Amdel and the Department of Mines is:

|                  | <u>Amdel sample.</u> | <u>Mines, (R 731).</u> |
|------------------|----------------------|------------------------|
| CaF <sub>2</sub> | 16.1%                | 20.0%                  |
| Sn               | .13%                 | .22%                   |
| W                | .08%                 | .14%                   |

Full lists of available analyses of the Mines bulk sample are in Appendix 30. Analyses by Comalco laboratory, Amdel and the Mines Department are listed. The Mines Department analysis for fluorine (7.8%) is much lower than that of both Amdel and Comalco (~10%), however the Mines Department admit that their fluorine analyses are not consistent and "should be taken as indicative only".

Aim and methods

Comalco's aim when submitting the sample was the recovery of acid grade fluorite. The Department of Mines decided that an exploratory project was necessary, to fully determine the nature of the material submitted.