Mineral Resources Business

Key Strategies
- Achieve a continuously high operating rate at the Caserones Copper Mine
- Reinforce competitiveness by achieving thoroughgoing cost reductions at the Caserones Copper Mine

Business Overview
At the Caserones Copper Mine, which the Group has taken the lead in developing since acquiring a share of the mine in 2006, copper concentrate production began in May 2014. We have also invested in some of the world’s largest copper mines, including Los Pelambres and Escondida. Our equity entitled copper mine production totaled around 200,000 tons in fiscal 2018.

Review of Fiscal 2018
In March 2018, SCM Minera Lumina Copper Chile (MLCC), operator of the Caserones Copper Mine, renewed its management structure, assigning Japanese personnel to key positions. Then in May 2018, the Caserones Division was established to provide agile, centralized administration of the Caserones Copper Mine. More deeply involved operator of the Caserones Copper Mine, renewed its management structure, assigning Japanese personnel to key positions. Then in May 2018, the Caserones Division was established to provide agile, centralized administration of the Caserones Copper Mine. More deeply involved in charge of each of the operations. As a result of these efforts, along with equipment improvements, the copper recovery rate—a main indicator of operational performance—was greatly increased.

Operator Training by Japanese Engineers
Operator training by Japanese engineers is one of the activities contributing to improvement of operational performance at the Caserones Copper Mine in fiscal 2018. The production processes at the mine had been beset by various technical issues. With the aim of resolving them, multiple Japanese engineers were sent to the site starting in March 2018. The Japanese and Chilean staff worked together on various improvements, including making sure patrols were being carried out properly, providing on-the-job training for operators, and making practical use of feedback from regular meetings with staff in charge of each of the operations. As a result of these efforts, along with equipment improvements, the copper recovery rate—a main indicator of operational performance—was greatly increased.

Outline of Mineral Resources Business and Metals Business

Overseas copper mines in which we have invested

<table>
<thead>
<tr>
<th>Mine</th>
<th>Participation</th>
<th>Production Capacity</th>
<th>Copper Recovery Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caserones (Chile)</td>
<td>52%*1</td>
<td>650,000 tons (Japan)</td>
<td>56.8%</td>
</tr>
<tr>
<td>Los Pelambres (Chile)</td>
<td>3%*</td>
<td>250,000 tons*</td>
<td>53.2%</td>
</tr>
<tr>
<td>Minas Mining &amp; Smelting Co., Ltd.</td>
<td>36%</td>
<td>200,000 tons*</td>
<td>46.2%</td>
</tr>
<tr>
<td>LS-Nikko Copper</td>
<td>3%*2</td>
<td>270,000 tons (South Korea)</td>
<td>39.9%</td>
</tr>
</tbody>
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Key Strategies
- Maintain safe and stable operation of facilities and strengthen cost-competitiveness

Business Overview
We have world-class production capacity for refined copper, supported by our smelting and refining alliances. Our process enables us to produce high-quality refined copper and other metal products efficiently, and we supply stably to Asian markets where high demand is anticipated, chiefly in Japan and China.

Review of Fiscal 2018
While global prices of copper and its by-product sulfuric acid have been trending higher, conditions for purchasing raw materials have worsened with tightened market conditions for copper concentrates. In such a situation, we took measures to increase earnings, such as improving the sales premium, reducing costs, and stabilizing operations at each production site. While global prices of copper and its by-product sulfuric acid have been trending higher, conditions for purchasing raw materials have worsened with tightened market conditions for copper concentrates. In such a situation, we took measures to increase earnings, such as improving the sales premium, reducing costs, and stabilizing operations at each production site. With respect to our operations at the production sites, the Saganoeski Smelter & Refinery of Pan Pacific Copper Co., Ltd. and the Onsan Smelter of LS-Nikko Copper Inc. (South Korea) are running smoothly. While global prices of copper and its by-product sulfuric acid have been trending higher, conditions for purchasing raw materials have worsened with tightened market conditions for copper concentrates. In such a situation, we took measures to increase earnings, such as improving the sales premium, reducing costs, and stabilizing operations at each production site. With respect to our operations at the production sites, the Saganoeski Smelter & Refinery of Pan Pacific Copper Co., Ltd. and the Onsan Smelter of LS-Nikko Copper Inc. (South Korea) are running smoothly. While global prices of copper and its by-product sulfuric acid have been trending higher, conditions for purchasing raw materials have worsened with tightened market conditions for copper concentrates. In such a situation, we took measures to increase earnings, such as improving the sales premium, reducing costs, and stabilizing operations at each production site. With respect to our operations at the production sites, the Saganoeski Smelter & Refinery of Pan Pacific Copper Co., Ltd. and the Onsan Smelter of LS-Nikko Copper Inc. (South Korea) are running smoothly. While global prices of copper and its by-product sulfuric acid have been trending higher, conditions for purchasing raw materials have worsened with tightened market conditions for copper concentrates. In such a situation, we took measures to increase earnings, such as improving the sales premium, reducing costs, and stabilizing operations at each production site. With respect to our operations at the production sites, the Saganoeski Smelter & Refinery of Pan Pacific Copper Co., Ltd. and the Onsan Smelter of LS-Nikko Copper Inc. (South Korea) are running smoothly.

Outlook for Fiscal 2019
Regarding raw materials procurement and product sales, we will seek to procure high-margin raw materials through collaboration with the recycling business, and to increase product margins for both refined copper and by-products. As for production, the periodic repairs at the Saganoeski Smelter & Refinery to be conducted in fiscal 2019 will be aimed at increasing copper concentrate processing capacity.

Through such measures, we are striving to raise production efficiency and profitability, and to build up the business structure to become one of the world’s most cost-competitive suppliers.

*1 Indirect ownership portion of JX Nippon Mining & Metals (as of March 31, 2019)
*2 PPC’s offtake of the total production capacity of 290,000 tons
*3 The amount corresponding to JX Nippon Mining & Metals’ equity share of the total production capacity of 680,000 tons

Metals Business