

RINGKASAN

PT. Adidaya Tangguh (PT ADT) merupakan perusahaan penambangan bijih besi yang berlokasi di Kecamatan Ledo, Taliabu Barat, Taliabu Barat Laut dan Taliabu Utara, Kabupaten Pulau Taliabu, Provinsi Maluku Utara. Sistem penambangan yang digunakan saat ini yaitu sistem tambang terbuka dengan metode *open cast mining* menuju ke *open pit mining*. PT ADT memiliki target produksi sebesar 3.000.000 ton/tahun bijih besi dengan nilai *stripping ratio* maksimal 1 : 2. Endapan bijih besi di daerah prospek pada *pit* memiliki kadar Fe total berkisar 40% - 50%. COG yang ditetapkan oleh perusahaan sebesar > 20%, sehingga COG tidak diperhitungkan dalam penambangan karena seluruh kadar dari endapan bijih besi ini dapat ditambang. Penelitian ini bertujuan untuk membuat suatu rancangan teknis *sequence* penambangan bijih besi selama satu tahun yang dibagi ke dalam rancangan triwulan yang meliputi rancangan kemajuan penambangan, rancangan *waste dump*, dan rancangan kebutuhan alat mekanis.

Metodologi penelitian meliputi studi pustaka serta melakukan orientasi dan observasi mengenai permasalahan yang ada di lapangan. Data yang dibutuhkan dalam penelitian ini berupa data primer dan sekunder. Data yang telah didapat kemudian dilakukan pengolahan dan dianalisis sehingga menghasilkan suatu kesimpulan berupa rancangan teknis penambangan yang memenuhi target produksi bijih besi sebesar 3.000.000 ton/tahun.

Rancangan kemajuan penambangan dibuat didasarkan pada target produksi yang telah ditentukan perusahaan. Hasil *reserve* berdasarkan desain pada tahun 2022 didapatkan volume *overburden* sebesar 1.555.239 BCM, bijih besi sebesar 3.033.202 ton dengan SR = 0,57 : 1, pada triwulan I didapatkan volume *overburden* sebesar 338.126 BCM, bijih besi sebesar 1.109.779 ton dengan SR = 0,38 : 1, pada triwulan II didapatkan volume *overburden* sebesar 429.081 BCM, batubara sebesar 513.783 ton dengan SR = 0,86 : 1, pada triwulan III didapatkan volume *overburden* sebesar 502.838 BCM, bijih besi sebesar 300.594 ton dengan SR = 1,67 : 1, dan pada triwulan IV didapatkan volume *overburden* sebesar 285.194 BCM, bijih besi sebesar 1.109.046 ton dengan SR = 0,33: 1. Rancangan *waste dump* terletak 500 m di sebelah selatan dari *pit*. Total kapasitas *waste dump* berdasarkan desain sebesar 2.664.888,96 CCM dengan luas 1,04 Ha. Berdasarkan desain dengan jenis timbunan yang diterapkan adalah *Valley Fill*. Jenis timbunan *Valley Fill* dipilih karena topografi di daerah penelitian atau crest dump karena pada daerah penambangan mempunyai topografi yang curam, berbukit dan berlembah. Jenis alat muat yang digunakan dalam penambangan adalah Sany SY365H yang berpasangan dengan alat angkut Sany SKT90S. Kebutuhan alat pada tiap triwulan mengalami perubahan yang diakibatkan perbedaan produksi *overburden* dan jarak angkut menuju *waste dump* berdasarkan rancangan yang dibuat.

SUMMARY

PT Adidaya Tangguh (PT ADT) is an iron ore mining company located in Lede District, West Taliabu, Northwest Taliabu and North Taliabu, Taliabu Island Regency, North Maluku Province. The mining system used today is an open mining system with the open cast mining method leading to open pit mining. PT ADT has a production target of 3,000,000 tons/year of iron ore with a maximum stripping ratio value of 1: 2. Iron ore deposits in the prospect area in the pit have a total Fe content ranging from 40% - 50%. COG set by the company is >20%, so COG is not taken into account in mining because all levels of this iron ore deposit can be mined. This study aims to make a technical design of the iron ore mining sequence for one year which is divided into a quarterly design which includes the design of mining progress, the design of the waste dump, and the design of the need for mechanical equipment.

The research methodology includes literature study as well as conducting orientation and observations regarding the problems that exist in the field. The data needed in this study are primary and secondary data. The data that has been obtained is then processed and analyzed to produce a conclusion in the form of a mining technical design that meets the iron ore production target of 3,000,000 tons/year.

Mining progress plans are made based on production targets that have been determined by the company. The results of the reserve based on the design in 2022 obtained an overburden volume of 1,555,239 BCM, iron ore of 3,033,202 tons with SR = 0.57: 1, in the first quarter an overburden volume of 338,126 BCM was obtained, iron ore of 1,109,779 tons with SR = 0.38 : 1, in the second quarter the overburden volume was 429,081 BCM, coal was 513,783 tons with SR = 0.86 : 1, in the third quarter the overburden volume was 502,838 BCM, iron ore was 300,594 tons with SR = 1 ,67 : 1, and in the fourth quarter the volume of overburden is 285,194 BCM, iron ore is 1,109,046 tons with SR = 0.33: 1. The waste dump design is located 500 m south of the pit. The total capacity of the waste dump based on the design is 2,664,888.96 CCM with an area of 1.04 Ha. Based on the design, the type of embankment applied is Valley Fill. The Valley Fill embankment type was chosen because of the topography in the study area or a crest dump because the mining area has a steep, hilly and valley topography. The type of loading equipment used in mining is the Sany SY365H which is paired with the Sany SKT90S conveyance. The need for equipment changes every quarter due to differences in overburden production and transportation distances to the waste dump based on the design made.