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OPTIMIZATION OF REAL-TIME OPERATIONAL DATA MONITORING THROUGH INSTALLING THE DEVICE ON THE UNIT

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ABSTRACT
Coal is the largest natural resource in Indonesia and has a vital role in global energy in various industries. PT Putra Perkasa Abadi (PPA), a mining contractor in South Kalimantan, faces problems with manual reporting being late and prone to errors. This project aims to speed up the digitization of the reporting process by providing PPA Team devices in the Heavy Equipment (A2B) and Support units. This is in line with the commitment of the PPA Mining Work Safety, Environment and Quality (K3PLM) Policy. This implementation starts from observation and data collection by selecting SS6 devices and creating designs for each unit. Continue with device installation, analyze problems, and repair installation. Following, carry out trials and socialize the use of the device to operators. With the implementation of the PPA Team application on the SS6 Monitor, Operators at PPA can independently input data on operational activities, including check-in / check-out units. It will reduce paper in operational reporting by providing an SS6 Monitor device. In addition, cost calculations can be adjusted to actual data, and operators can monitor unit Hour Meter (HM) data and operational activities directly on the SS6 Monitor. This reduces the duration of data input time, but also reduces the intensity of crowding on communication radios, and minimizes data input errors. Therefore, optimizing operational monitoring at PPA by installing devices on units can increase efficiency, including HM input for cost calculations, efficient unit HM reporting, fast check-in / check-out processes, digital unit breakdown reporting for more efficient communication, rapid digital validation of P2H, and moving from paper forms to digital tools for more sustainable work practices.

INTRODUCTION

Coal is a combustible sedimentary rock, formed from plan t residues in varying levels of preservation, bound by compaction processes and buried in basins at varying depths, from shallow to deep, and is one of the largest natural resource reserves in Indonesia (International Committee for Petrology, 1963) (Yenni &; Prabowo, 2021). Coal is vital as a global energy source, contributing up to 40% of power generation worldwide (Team of the Center for

Unconventional Earth Resources Studies, 2020) (Munandar, Zeffa Aprilasani, Samputra, & S Pi, 2018). Besides being used in power plants, coal is also the main fuel for producing steel, cement, alumina, paper, chemical products, and pharmaceuticals. From coal, derivative products such as soap, aspirin, solvents, dyes, plastics, and fibers are also produced (Team of the Center for Non-Conventional Earth Resources Studies, 2020). This makes it an important commodity in sustaining life, especially in energy needs. Its overall contribution makes coal a very valuable resource. The largest distribution of coal is on the islands of Sumatra and Kalimantan (Batubara, Windarto, Hartama, & Satria, 2019). Especially in Kalimantan, South Kalimantan Province, there are many potential coal resources scattered along the Warukin Formation (Afin &; Kiono, 2021).

PT Putra Perkasa Abadi (PPA) is a mining contractor company in Indonesia that focuses on stripping Overburden and coal ((Sastradi & Kurniawan, 2023). The company operates in a mining area located in Tabalong Regency, South Kalimantan Province.

By the management policy contained in the Mining, Environment and Quality Work Safety Policy (K3PLM), PT PPA requires all operational activities to implement a digital data reporting process in the PPA Team application, so that data input related to check-in *and* check *Operators, P2H units, HM inputs, and* unit breakdown reporting *can be done on the application*.

Various problems arise in the site area in reporting operational activities (Armiyanto, 2019). In current conditions, some reporting is carried out using paper forms and radio communication media, and the reporting process is carried out with two processes so that it takes longer than manually inputting data digitally (Munawar, 2019). It is not uncommon for errors to occur in inputting data.

Some problems include that the data inputted in the system is often not actual due to incorrect information received by the Admin (Irawan & Simargolang, 2018). This causes data reporting time delays and potential data input errors. Furthermore, the process of reporting *unit breakdowns* cannot be timely because it is still carried out through radio communication with the potential for misinformation due to radio channels in *crowded* conditions CCR forwards information to WhatsApp groups. Then the P2H *data input process that is done manually using the form increases the duration of time when taking* the form takes approximately 5 minutes, then checking the unit and checklist form takes approximately 10 minutes, and submitting *approval* on the P2H form to the Supervisor takes approximately 10 minutes with a queue process, after that the form is collected to the Admin to input data in the application PPA Team. Another problem is that fleet setting information is still carried out through radio communication both from CCR and Supervisor to the Operator due to the unavailability of *devices* in the A2B unit and Support unit. Furthermore, the *calculation of costs* from operational activities cannot be calculated precisely because the data collected is not yet actual (Gonzalez et al., 2017), and the data reporting process is carried out through radio communication, the frequency of communication on the radio is getting higher due to the unavailability of other reporting media.

Therefore, this project is very important to be carried out in line with the PPA commitment contained in K3PLM, namely, focusing on accelerating the process of digitizing data and information. The target is to improve the independent reporting process by the Operator to obtain actual and real-time data and reduce the duration of time needed to input data (WASIUDIN, 2020). So that the provision of *devices* for the PPA Team application in the A2B unit and Support unit is needed to support this goal.

Optimization Of Real-Time Operational Data Monitoring Through Installing The Device On The Unit

This project focuses on management needs with the following objectives: providing *PPA Team devices in A2B units and Support units, limiting access from* devices, only focusing on inputting and *monitoring* data by Operators, designing and installing devices for PPA Teams by SOPs and not contrary to K3 policies.

RESEARCH METHODS

This research method uses qualitative methods, namely research approaches used to understand and explain human phenomena in depth. This method aims to explore the meaning, perception, and social context that involves research participants (Palaya, Pearson, & Nash, 2018). Qualitative methods are often used in social research, psychology, anthropology, education, and other fields where researchers are interested in an in-depth understanding of human experience and social contexts. This approach gives researchers the freedom to explore complex and multifaceted aspects of the phenomenon being studied.

RESULTS AND DISCUSSION

Applications for permits to carry out *trial activities* are informed to related parties, namely the Production Department, SHE, *Engineering, and* Plant *regarding testing of* SS6 device installations *in A2B units and Support units.* This *trial* was carried out to analyze the obstacles that existed during the installation and operation of *the* SS6 device on the unit (Faÿ, Robles, Marcos, Aldaiturriaga, & Camacho, 2020). Proof of applying for permission to carry out the SS6 Monitor trial via email.

Conduct a trial related to *bracket* endurance on the unit for 3 days from July 22, 2023, to July 24, 2023 (Hayat, 2022). After testing related to the durability of the bracket on the unit was declared safe according to the trial results during sampling of each type of unit, the activity continued according to the *previously planned time frame*.

The installation of SS6 *devices* on A2B units and support units was carried out from August 4, 2023, to September 30, 2023, there were no findings of SS6 monitors that were detached from the bracket, and no loose bolts were found. At this trial stage, testing of electrical power installations was also carried out for the needs of devices so that the *device* could function properly (Husman & Ariyono, 2018). The results of discussions with PJA, KO, and HSE Operations regarding the taking of SS6 power lines are not recommended to take power lines on unit panels to minimize the risks arising from the use of power wearing. Therefore, corrective action is planned to be taken against the problem of taking the power line, namely using a 12 Volt DC *Socket Lighter* up to 24 Volt DC that is available in each unit, by adding a *Car Charger* with an output of 5 Volt DC according to the needs of the SS6 Monitor.

The trial of using SS6 devices in A2B units and Support units for 1 month of effective work time starts on August 4, 2023 until September 30, 2023. At this stage, the operator checks *in / checks out*, and HM reporting is carried out directly on the SS6 monitor on the unit. The operator also inputs P2H data digitally and the data is directly sent to the Supervisor for verification. The form of reporting obtained by the Supervisor can be seen as shown in Figure 3.13. in the form of unit P2H Form files and monitoring unit HM data through the PPA Team application.

The results of the *trial* installation and use of the SS6 monitor obtained obstacles and follow-up plans, namely as follows: Availability of SS6 WiFi Network in Front and Disposal

Areas, Bracket Condition, and Placement of SS6 Monitor Bracket in the CAT777 Type OHT Unit Cabin, SS6 Power Monitor Cable Device Condition on D85 Unit, Position and Shape of SS6 Monitor Bracket on HD785 Unit.

Further Action Implementation

After the obstacle analysis has been carried out, it will proceed with the follow-up evaluation results of the *trial implementation* related to the installation and use of SS6 devices in the unit. The follow-up evaluation will be carried out with a root cause-solving approach according to the constraints, focusing on SS6 WiFi network *coverage* problems in the Pit area and repairing the installation of brackets and SS6 monitors in several sample units. The implementation of improvements by the previously planned follow-up plan will be outlined as follows: Provision of SS6 Mobile Tower and Repair of SS6 WiFi Network Devices in the Pit Wara Area. SS6 Monitor Installation Repair Process on OHT Unit.

After the improvement ideas can be implemented, the provision of *devices* for the PPA Team application in the A2B unit and Support unit is carried out, the processes related to the input process flow and monitoring of production activity data on SS6 that are running now are as follows Data Input and Reporting by Operators Through SS6 Monitors. Approve by Production Supervisor Through PPA Team Application. Unit *breakdown* reporting via SS6 monitor. Unit Ready Status from Base Control In *Real-time*. Information Received by Plant Supervisors Quickly and Precisely. *Report* to *Head Office* and Person in Charge of Operations.

CONCLUSION

The optimization of real-time operational data monitoring at PT Putra Perkasa Abadi ADW through the installation of *devices* on the unit is expected to streamline and streamline operational activities such as Input of operator working hours data directly into the system increase the accuracy of cost calculations, ensure cost estimates are by operational reality, and provide a strong basis for decision making related to budget allocation and planning human resources. Unit HM reporting at the beginning of unit breakdown and when the unit is operational ensures HM calculations are in line with optimal operation, provides a quick overview of repair times, and supports efficient decision-making in operational management. Unit operations at the beginning of the shift are smooth thanks to an efficient *check-in/check-out* process, minimizing wasted time and allowing seamless unit transitions. Reporting *breakdowns* on the unit through a digital system reduces noise on radio channels, improves communication efficiency, and optimizes the use of resources in emergencies. Digital validation reduces P2H validation time by operational supervisors, allows units to operate earlier, and improves overall time efficiency (Raynonto et al., 2023). Switching from paper forms to digital devices has succeeded in reducing paper usage, increasing data input efficiency, and supporting more sustainable work practices (Nabila, 2020)

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