U.S. Department of Labor

Assistant Secretary for
Occupational Safety and Health
Washington, D.C. 20210

JAN 04 2011

Mr. Patrick R. Donahoe
United States Postmaster General
U.S. Postal Service
475 L'Enfant Plaza, S.W.
Washington, D.C. 20260-4231

Dear Mr. Donahoe:

The purpose of this letter is to inform you of the results of the Occupational Safety and Health Administration (OSHA) inspections that were conducted in regard to recordkeeping and ergonomic issues. Below you will find a summary of the findings regarding each issue.

Ergonomics

OSHA received over 170 complaints regarding the United States Postal Service (USPS) Delivery Bar Code Sorter (DBCS) operations at Processing and Distribution Centers (P&DCs) nationwide. These complaints alleged that injuries occurred due to worker exposure to ergonomic stressors associated with the operation of the DBCS. As part of the investigation strategy, OSHA selected nine sites for inspection as a representative sample.

A multi-person team performed onsite inspection activities which included observing and videotaping DBCS operations, interviewing employees and management, and evaluating training, maintenance, and recordkeeping, as well as other data. OSHA's resulting comprehensive technical report, "Ergonomic Evaluation of the Delivery Bar Code Sorter," details the compiled findings of the nine ergonomic inspections and is enclosed with this letter.

The comprehensive findings from the ergonomic inspections across the country indicate that the DBCS mail processing system directly affects worker physical health. The ergonomic evaluation of the DBCS Feeder and Sweeper tasks identified generally consistent risk factors at most inspected sites. Not all risk factors were identified at every facility at the time of our visit, but the underlying potential seemed to be present at all sites because of the similarity of equipment and job tasks. The technical report outlines the risk factors identified at the nine sites and proposes possible control options that OSHA believes will be effective in mitigating these risks.

OSHA will provide a copy of the comprehensive technical report to each USPS P&DC site for which OSHA received an ergonomic complaint regarding the DBCS operations. Each of the nine inspected sites have received a detailed site specific Ergonomic Hazard

Alert Letter (EHAL) along with a copy of the comprehensive technical report. Enclosed are copies of the nine EHALs.

We strongly suggest you utilize the information provided in the technical report and the P&DC site specific EHALs to aid in eliminating or reducing the risks present in the Feeder and Sweeper tasks.

Recordkeeping

In addition to ergonomics, OSHA believes that under-recording of injuries and illnesses may be a pervasive problem at the USPS P&DCs. OSHA inspected ten USPS P&DCs (nine were related to ergonomic complaints, and the tenth was initiated due to a separate complaint not related to ergonomics), which resulted in citations being issued to eight of the facilities due to numerous violations of OSHA's injury and illness recordkeeping requirements under 29 CFR Part 1904. The percentage of the inspected facilities with violations is indicative of a systemic failure by the USPS in properly maintaining the OSHA Log of Work-Related Injuries and Illnesses (OSHA 300 Log).

We are also taking this opportunity to advise the USPS to conduct a thorough evaluation of its recordkeeping practices nationwide to ensure that the OSHA 300 logs have been properly maintained and corrected, if necessary. If recordkeeping violations are found during a future OSHA inspection at any USPS site, not just the previously cited facilities, then the USPS may be subject to citations classified as willful or repeat.

OSHA's findings with respect to the recordkeeping violations are conveyed in a separate letter (enclosed) to Mr. Sean M. Lacey, Director, Office of Safety and Environmental Performance Management for the USPS.

If you have any questions, please feel free to contact Thomas Galassi, Director of Enforcement Programs at (202) 693-2100.

Sincerely,

David Michaels, PhD, MPH

Enclosures (11)

cc: National Association of Letter Carriers
National Postal Mailhandlers Union
American Postal Workers Union
Sean M. Lacey, Director, Office of Safety and Environmental Performance Management, USPS

Ergonomic Evaluation of the Delivery Bar Code Sorter

Most of the letter mail is processed by the Delivery Bar Code Sorter (DBCS). The DBCS reads a bar code transcribed version of your address and sorts it for shipment to other locations outside the local area or for home delivery to a particular address. The DBCS generally uses a *feeder* who loads the mail into the sorter and a *sweeper* who removes the sorted mail from the DBCS for further processing. On rare occasions it was observed that a single worker or individual performed both feeder and sweeper tasks. The workers who generally perform these tasks are members of the American Postal Workers Union, with one exception of where there were members of the National Postal Mailhandlers Union which assisted with the task. Sweepers and feeders generally rotate between the two positions during the work shift. Almost all sorting tasks have been consolidated to Tour 3 (approximately 6 pm to 2 am) and Tour 1 (approximately 10 pm to 6 am). Maintenance of machines is primarily performed on Tour 2, the day time shift.

Feeder Task Description:

The feeder's primary responsibility is to get mail into the DBCS for sorting. Mail typically arrives at the feed station, shown in foreground of Figure 1, in a mail tray. It is usually brought by some kind of transport device such as an all purpose mail cart (APC), bulk mail cart (BMC), general purpose mail cart (GPMC), hamper, or flat truck. Some sites have a tray management system (TMS) that moves the trayed mail to the feeder station via a conveyor or trolley system. The feeder station consists of an induction point, where mail enters the DBCS, a feed belt where prepped mail is continually fed into the induction point, a jogger which vibrates the mail to ensure that the bottom and inside edges of mail are in alignment and all letters are separated, and a staging area where full trays of mail are placed prior to jogging. The staging area may be a shelf behind the jogger or a separate table or stand in a close proximity to the jogger.

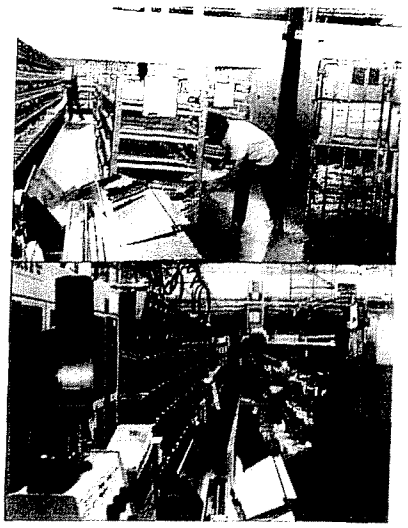


Figure 1 Typical DBCS Workstations. Top panel shows typical 1226F rolling rack system and bottom panel shows TMS conveyor system

The feed process begins with the removal of a tray from the conveyor or transport device and its placement on the staging shelf or table. In some cases, mail is staged on the feed mechanism itself. The mail is removed from the tray and is placed on the jogger plate for alignment and separation. Afterwards, the mail stack is pushed with the right hand onto the feeder belt. It is pushed forward until the first letter engages with the intake mechanism. Additional stacks of jogged mail are added to the end of the stack and a feed paddle is placed behind the last letter to provide continual tension to push subsequent mail into the intake point. While this describes the majority of the tasks performed during a feeder work shift there are other

sporadic tasks such as; computer input, moving carts, assisting the sweeper, and clearing jams associated with this job.

Ergonomic Risk Factors to the Low Back: Bending and Twisting While Lifting Heavy Weight

Figure 2 - Extended reaches and bending place stress on back and shoulders

Workers must repeatedly bend at the waist and twist to lift filled mail trays from lower levels of transport devices. Lifting trays out of the bottom of devices such as the hampers, Figure 2, requires very deep torso flexion and extended reaches. This hazard is also present when doors or netting are left in place on many carts since the impediment of netting, gates, or sides limits access to the trays. Torso twisting and reaching is further increased in circumstances where trays are positioned perpendicular to the workers shoulders. Cart sides, nets, or gates impede sliding the tray forward for better access which forces reaching and twisting since the tray must be lifted with two hands and one hand hold is at the back of the cart or hamper. Finally, this hazard is much more serious on Tour 3 which generally handles heavier Bulk Business Mail (BBM). Repeated bending at the waist moves the load farther away from the body and forces the worker to support the weight of the upper body in addition to the weight in the hands. Repeatedly bending and twisting the torso to lift loads, as observed, creates a potential risk of injury to the low back.

Ergonomic Risk Factors to the Hand and Wrist: Repeated Forceful Gripping, Finger Exertion and Contact Trauma

Workers perform many tasks that can require the use of significant finger force. They remove rubber bands from mail that comes in from other locations, use hand cutting tools to cut bands from trays, grasp stacks of mail with one hand, and lift and flip mail trays. The use of poorly fitting gloves can create resistance to opening and closing of the hand and increases the force needed to perform tasks, since the tactile response of the hand is reduced. These actions, which require repetitive forceful finger exertions, are often coupled with bent wrist postures which greatly increase the risk of the task.

Additionally, the use of hand tools with hard or sharp edges can create a contact trauma to the workers fingers and hands. Repeatedly using finger force, especially with bent wrist postures, can increase the risk of chronic and acute injuries to the hand and forearm. Contact trauma to the hand can increase the risk of nerve and vascular injury.

Ergonomic Risk Factors to the Low Back: Repeated Lifting of Heavy Weight

Some mail trays can be very heavy, weighing as much as 70 pounds. Calculations were performed on a number of lifting tasks using the NIOSH Revised Lifting Equation (RLE). The Recommended Weight Limit (RWL) generated from this calculation indicate

that most full trays lifted by feeders were equal to or heavier than the RWL. For instance, the calculation done of a task similar to that shown in Figure 2 produced a RWL of about 17 pounds. Most trays weight (in pounds) ranged from the high teens to mid twenties with many on primary sort weighing considerably more. Repeatedly lifting these weights will increase the risk of injury for almost all workers. During random weighing of trays, it was common to find at least a few trays that weighed between 40 to 70 pounds, which place most workers at a greater risk of injury. Single person lifting of heavy mail from any part of the transport device, particularly from lower areas, to the jogger or staging shelves can exceed the capability of many workers and increases the risk to the back, shoulder, hand and arm.

Figure 3 - Workers reach to retrieve mail from trays for jogging (top) and to place full trays on shelf (bottom)

Ergonomic Risk Factors to the Shoulder and Low Back: Repeated, Extended Reaches

Workers perform extended reaching during many parts of the feeding process. Workers may use elevated and extended reaches to access the handles of trays located at the upper levels of large and tall transport devices and use extended reaches to access handles positioned at the back of large carts. Trays will not be able to be pulled towards the worker, if netting and gates are left in front, therefore extended reaches will be necessary to access any mail trays in the device.

Extended reaches are used to place trays of mail on staging shelves located behind the jogger and are again used when the mail is removed from the shelf and placed on the jogger, Figure 3. The use of extended and elevated reaches can create both an acute and chronic risk of injury to the shoulder and moves the load farther from the body which increases the risk to the low back. This is especially true for shorter workers.

Ergonomic Risk Factors to the Hands and Arms: Repeated Forceful Shoulder Exertions

Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. Workers use compressive force with both arms to lift stacks of mail, as can be seen in the top panel of Figure 3, by exerting compressive force on either end of the mail stack. They also use essentially the same motion, with only the right hand, to push jogged mail up a small incline to the feeder.

Laboratory experiments were performed to simulate the process of lifting and moving mail by exerting compressive hand force on either end of a 7" to 9" unsupported stack of mail. This volume of mail movement was routinely observed. These tests showed that compressive forces in excess of the recommended 15 pounds were necessary to maintain

stack integrity for a large percentage of mail moved, especially when the mail consisted of slicker, non-envelope stock. Performing repeated, forceful exertions across the front of the body increases the risk of injury to the wrist, hand, shoulder, and upper back.

Ergonomic Risk Factor to Hands and Shoulder: Repeated Forceful Exertions with Awkward Postures

Some workers "flip" mail out of the tray. This technique uses a quick upward and outward motion to propel the letters out of the tray and onto the jogging table as can be seen in Figure 4. The force required to initiate the upward movement can be several times the actual weight of the tray and must be exerted by the shoulders and fingers. The hazard is greatly increased when the wrists are bent and the elbows are pulled away from the torso. Shorter workers appear to be impacted to a much larger degree than taller workers who may be able to maintain their arms in close to the body and keep their wrists relatively straight.

Figure 4 - Flipping mail creates wrist bending, requires forceful finger exertion, stressful shoulder postures

Additionally, some conveyors were equipped with rails on either side. Rails create an access impediment since trays must be lifted up and over the rail before can be moved to the feeder. Shorter workers bend the wrist while exerting finger force to lift the tray up and over the rails. Exerting force in these postures increases the risk of injury to the shoulder, arm, and hand especially for shorter workers.

Sweeper Task Description

The sweeper's primary task is to remove sorted mail from the DBCS sort pockets and transport it to a corresponding tray located in a 1226F rack about 3 feet away. There are two configurations of DBCS sorters. Older models are 3 tiers high and sort to 2 different sides of the sorter. Collection racks are arranged in a U formation. New models are 4 tiers high with the collector racks in a single line. Figure 1, top panel, shows the general layout of the 4 tier arrangement. The sweeper is responsible for clearing 200+ stacker pockets during the work shift and will generally rotate with the feeder throughout the day. It usually takes about 30 to 60 minutes at the beginning of a shift for pockets to fill to the point where the sweeper must remove mail. In this period the sweeper may perform preparatory tasks such as labeling trays, moving racks, arranging excess trays, and assisting the feeder.

There are two types of sweeper sort plans; Primary and Delivery Point Sequence (DPS). Primary sort takes customer mail and sorts it for processing to other areas of the facility or to other facilities. Delivery Point Sorting (DPS) is a two pass process which takes mail from within the facility, or from other facilities, and sorts it to an address for final deliver.

There may be more mail than a single tray in the rack can accommodate. As trays fill they must be removed from the assigned drawer of the 1226F rack so a new tray can be added. Filled trays during the DPS sort will generally be placed on the top of the 1226F rack that they came from and may be stacked up to 4 deep during heavy runs. Filled trays of primary sort mail may also be placed on top of the rack or may be immediately taken to a secondary transport device located around the station.

First pass DPS sorted mail will generally be moved to the feeder for the second pass using the 1226F cart. The sweeper and feeder generally work together to pull the full racks from the sort area and take them to the feeder area. The sweeper has primary responsibility for replacing the repositioned racks with a second set of empty 1226F racks that will be used for the second sort. In a few instances all DPS mail was off stacked to flat carts or nutting trucks for delivery to the feeder.

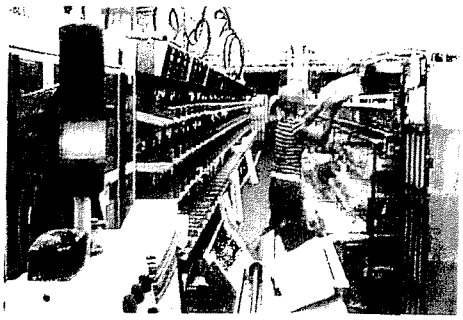


Figure 5 - Workers pull trays off conveyor for further processing.

When a primary sort or the second pass for the DPS sort is finished, all trays are removed from all positions of the 1226F racks and are placed into some kind of transport cart for further processing as can be seen in the top panel of Figure 1. Trays from the Primary sort will either be shipped to other P&DC locations or to feeder stations in the same facility. DPS trays will be sent to local post offices for delivery. Mail that is destined for shipment outside the facility will generally be placed in an APC or BMC cart. At least some, if not all, of this mail will be sleeved to keep the sorted mail in its assigned tray. This task involves the worker reaching through a cardboard sleeve, grabbing the tray and pulling it into the sleeve interior. Mail that is destined for in plant delivery may be placed into any kind of transport device from hampers to nutting trucks to larger carts.

In some locations that use a TMS, filled trays are placed on a take away conveyor. These systems typically do not use the 1226F carts, but have floor mounted racks with a conveyor that runs under or above the tray shelves similar to that depicted in Figure 5. The conveyor is designed to deliver the tray to the feeder or to a shipping area, but because of lack of capacity, many trays are removed from the conveyor at some point and are placed into a transport device. These systems seemed to be used for primary sort operations.

Figure 6 - Shorter workers must reach over shoulder height to access top tier

Ergonomic Risk Factors to Low Back and Shoulders: Repeated Extended and Above Shoulder Reaches

Workers (especially shorter workers) must perform repeated, above shoulder and extended reaches to perform tasks all through the sort process. Sweeper tasks and motions that require elevated arm postures include; clearing the upper sort pockets of mail, Figure 6, moving mail from

the sort pocket to the rack trays, placing mail into the upper trays, pulling out the upper drawers, lifting fully loaded trays to the top of the 1226F rack, Figure 7, or elevated conveyors, placing stacks of empty trays on the top of the 1226 racks, removing fully loaded trays from the top of the 1226F racks or elevated conveyors during pull down activities, clearing jams in the upper tiers of the racks, and sleeving mail that has been placed on the top tiers of 1226F racks.

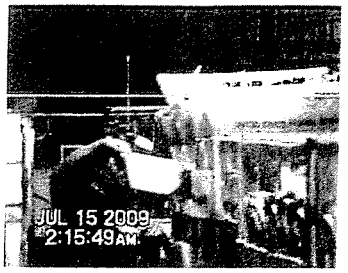


Figure 7; Full trays uploaded to top of 1226F rack.

- Calculations performed using the Michigan 3D Static Strength Prediction Model (3DSSP) indicate that most (about 95%) of the 63" tall women (fairly typical for the observed population) should be able to pull a tray from a height equal to a single postal tray on a 1226 cart. A few less (about 91%) would be able to do this task at a height of 2 postal trays. But the percent capable drops dramatically as you stack these higher than 2 high (about 75% at 3 high and 60% at 4 high). Many DBCS workers observed and interviewed fell into this category of stature and we regularly observed trays stacked 3 high and, on occasion, 4 high. Placing trays up to these levels or removing them from these levels on a repeated basis greatly increases the risk of injury to the shoulder.

- Workers were observed operating in a hybrid system originally designed to employ TMS to move filled trays though out the facility. In this system, filled trays were placed on a conveyor on top of the collection racks. It appears that when a tray was filled it was supposed to be placed on the conveyor which would robotically move it to the next destination. It was reported that this system was never capable of keeping up with the demand of mail flow. As observed, the system is now used in a hybrid configuration. In the hybrid system, all trays were placed on the conveyor which moves them to the far end of the sort racks, as can be seen in Figure 5. At the end of the conveyor, the trays were removed from the rack and placed in a cart. This process more than doubles the number of times filled trays must be handled and significantly increases the number of elevated and extended lifts performed. Lifting calculations performed on the task shown in Figure 5, using the NIOSH RLE, indicated that the recommended weigh limit for trays in this configuration is about 11 pounds. Trays heavier than that will create a hazard for most of the working population. This task should be considered hazardous since tray weight measured during investigation activities routinely weighed in excess of twice as much as recommended.

- Workers removing mail from four tray position drawers such as shown in Figures 5&8 must perform additional reaching and twisting motions. As can be seen in Figure 8, the worker faces towards the feeder to empty the sorter pocket and fill the trays. Filling the tray farthest from the feeder is essentially the same as filling a tray on a 1226F rack. But, as the worker tries to fill the subsequent trays on the drawer they encounter restricted access created by the rest of the drawer forcing workers to increase forward reaching forward and twisting.

Performing repeated lifts to distant and elevated locations with the elbows away from the torso and the hands above shoulder height increases the risk of injury to the shoulders and low back, especially for shorter workers.

Ergonomic Risk Factor to the Low Back; Repeated Bending and Reaching

Workers must perform deep torso flexions and extended reaching to accomplish numerous tasks throughout the sweeping process. Tasks that require the postures and motions include; clearing mail from the bottom stacker pockets, moving mail from the stacker to the rack, placing mail in the tray, Figure 6, pulling out the drawer that holds the tray, placing full trays on the conveyor if located below the racks, lifting full trays from lower tier drawers and placing them on the lower areas of carts or other transport devices. Reaching down and under the shelf above, which is necessary to access the paddle and mail, forces all workers to bend more at the waist than would otherwise be necessary, and places the arm in an awkward posture while exerting force. Repeatedly bending at the waist moves the load farther away from the body and forces the worker to support the weight of the upper body in addition to the weight in the hands. Repeatedly bending the torso forward and reaching while lifting loads, as observed, creates a potential risk of injury to the low back.

Figure 8 - Even shorter workers must bend to access lower levels of racks and pockets

Ergonomic Risk Factors to Shoulder and Back: Repeated Forceful Pulling

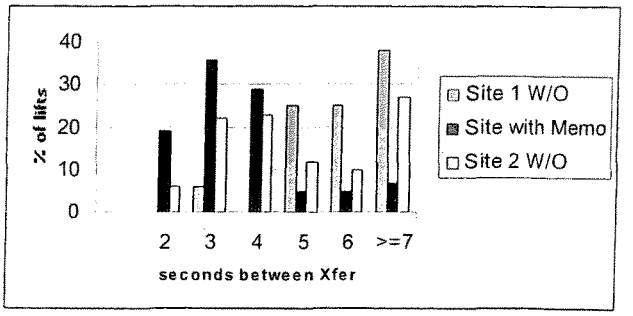
Workers must exert significant and/or unexpected force, usually across the body, hundreds of times per shift. They must repeatedly pull out rack drawers so mail can be placed into the trays. At all sites evaluated, workers were performing the sweeping task using damaged or non functional drawers. The forces (in pounds force) required to pull these drawers, as determined by random sampling of 1226F carts, averaged in the mid to high teens, with lows in the single digits. Several drawers at each site required force exertion in excess of 30 if they could be pulled out at all. All sites had some drawers in the sampling that were stuck and could not be pulled out. When this happens, it is usually totally unexpected as there is no indication to the user of this condition until they try to pull the drawer. Drawers that worked fine the last time they were pulled may now be impossible to open due to a malfunctioning cam system in the back of the rack. Since the weaker shoulder muscles are primarily involved in these lateral motions, it is recommended that the upper limits of force that the shoulder must provide be limited to a level of about 15 pounds force. Many of these lateral pulls are also performed with the arm in elevated postures, which further isolates the shoulder muscle and increases the risk of injury.

Calculations performed using the 3DSSP and a theoretical worker that is 63" tall and about 135 pounds indicates that between 10% and 30% of these workers will not be

capable of performing this task when the force needed to pull the drawer is in excess of about 20 pounds force. High frequency exertion of significant force, especially when it is unexpected, increases the risk of injury to the shoulder, arm, hand and back.

Ergonomic Risk Factors to the Shoulder, Low Back, and Hand: Procedural Increases in Repetition

Workers are encouraged, or in some cases required, to "continually" clear sort pockets before they were 50% full. National guidance recommends waiting until pockets are 75% full. One site issued a memo to this effect, which seems to have resulted in an increase in repetition as measured by the reduction in the time spent between transfers from the sorter pocket to the rack, as can be seen in Graph 1. Premature emptying of pockets increases the frequency of all motions used to transfer mail from the sort module to the 1226F racks. It also may encourage the use of frequent finger grasping using one hand to move mail from pockets, instead of the use of the two handed sweep motions recommended when larger amounts of mail are moved. Additionally, it encourages continual walking along the full length of the stacker modules to sweep, monitor and clear mail from pockets. Continual removal of smaller bundles of mail increases the risk of injury to the hand, arm, shoulder, back, and lower extremity, as well as full body fatigue.



Graph 1 - Frequency Sampling & Comparison of 3 Sites

Ergonomic Risk Factors to the Body: Generalized Fatigue

Most workers perform their sweeping task in a manner that increases the overall fatigue of the task. They are on their feet for the full period of their shift. There were no chairs, stools, or lean bars observed at any facility. The lack of such devices limits the opportunities for micro pauses throughout the work day. Workers are working in excess of 200 sort pockets, which were more than was recommended in Postal guidelines. Reducing opportunities for rest and recuperation, and working more than the recommended number of pockets, increases worker fatigue and the risk of injury.

Ergonomic Risk Factors to the Shoulder and Hand: Increase in Repetition, Awkward Postures, and Grasping

Figure 9 - The entire tray is available when it is supported by the rack drawer.

Poor design and maintenance of 1226F racks make it difficult, or in some cases impossible, to pull rack drawers out. In other cases, the drawers may pull all the way out and fall to the floor. Many workers do not even attempt to pull out the drawer that supports the mail tray during the mail transfer process since they never know about the condition of the hardware and the result of their efforts. As can be seen in Figure 7, top panel, if the drawer is not used, a smaller portion of the available space within the tray is exposed. Smaller volumes of mail must be moved more frequently when a smaller portion of the tray is exposed. Additional forceful exertions with the right arm must be used to push the mail to the back of the tray after it has been deposited, and increased hand, arm and shoulder force must be exerted to push and wedge mail into the smaller space. One hand or a leg must often be used to support the tray during the deposit process, which means many transfers are performed one handed or using awkward and unbalanced postures. Filling the mail tray without the support of the drawer encourages more frequent and forceful motions and the use of one handed transfer and accentuation of awkward postures. All of which increases the risk of injury to any body part used in the transfer of mail, specifically the shoulder, arm, and hand. Additionally, if the drawer pulls out, there may be contact injury to the foot or leg

Additional System Wide Concerns

Some ergonomic risk factors observed during the evaluations pertained to all workers involved in the DBCS task and are not position dependant. These may include:

Work Process: Machine Layout

Many of the facilities are in the process of consolidation, resulting in more machines in a fixed space. When adequate space, as defined by the manufacturer, is not provided for the DBCS, there are a variety of problems that occur. More trays must be carried longer distances; carts must be pushed or pulled longer distances; there is more rearrangement of racks and carts; there is an increase in the use of awkward postures since there is less room to properly lift and move materials; and trays are often stacked much higher on top of 1226F carts since there is less room for off-stacking. Increasing the frequency and severity of these stressful risk factors greatly increases the risk of injury.

Work Process: Extended Exposure to Risk Factors

Rotation between the sweeper and feeder positions has been identified as a primary intervention by the Postal Service and manufacturers of the DBCS equipment, to reduce the effects of ergonomic risk factors, such as forceful repetition combined with awkward postures. Rotation was observed at all sites visited, but there was a wide discrepancy in the frequency of the rotation. Some rotated at breaks and at lunch resulting in a 2 hour rotation, others rotated between first and second pass, making a 4 hour rotation. Others rotated when they felt like it or not at all. The recommendation by the manufacturer is to rotate on a 30 minute basis. Without proper rotation, there may be inadequate recuperation time and the chance of fatigue and injury is greatly increased.

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and Sweeping the DBCS is a predominantly right shoulder intensive task. Feeder tasks that require significant use of the right shoulder include: reaching to the back of a cart to grab tray handles, lifting a stack of mail from the jogging shelf, and pushing a stack of mail from the jogger to the feeder. Sweeper tasks that require significant use of the right shoulder include: reaching into a pocket to lift the paddle and pull the mail forward so it can be removed, lifting the mail for transit to the tray, placing the mail in the tray, pushing mail to the back of the tray, pulling open the rack shelf to place the mail in the tray, pulling the full tray out of the rack, pushing and lifting the tray up onto the top of the rack, placing the trays into the transport devices since the tray must be turned so the label is out towards the front, and pulling racks and carts around the work floor. There is very little variation possible in this task and the right shoulder gets very little rest and recovery time. During interviews, the majority of workers at all sites indentified the right shoulder as the site of greatest pain. Concentrating the stress of a task to a single part of the body significantly increases the risk of injury to that body part.

Organizational Structure: Increased Exposure to Risk Factors Caused by High Volume Days

Mail volumes on some days of the week, Sundays and holidays, are much higher than normal and, according to workers and management interviews, there is often inadequate staffing to handle the increase. Higher volumes of mail with the same staff will require performance of additional motions such as deep torso bending while lifting and elevated in extended reaches. It was widely reported that during these busy days, mail is often stacked 3, 4, or in some cases 5 high on top of 1226F because increased mail volume leads to inadequate space to store filled trays. The process and staffing are not sufficient to handle these higher mail volumes. Without adequate staffing, the amount of weight lifted by a single person will increase, as will the number and severity of awkward postures used to move that weight. Increasing the weight lifted and the number of awkward postures will greatly increase the risk of injury.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

There was evidence of a general lack of understanding about the hazards and injuries associated with the process. During management interviews, almost all managers assigned to Tour 1 and 3 indicated ignorance of any risks associated with performing DBCS tasks. This severely limits the opportunity for improvement in the work place since there isn't a basic knowledge of the hazards or even the process. Additionally, many of the decision making managers work Tour 2 while almost all production work is done on Tour 1 and 3. It will be very difficult to address problems when management at all levels, especially safety personnel, work a significant portion of the time on the shifts where the majority of the work is not performed. Finally, it was reported during interviews that Supervisors have ignored injury complaints, encouraged clerks to "work through" the pain, or have discouraged the reporting of the injury. This fosters a perceived lack of "caring" about the worker and encourages workers to take care of their work related injures themselves by seeing their own physician for treatment. All of these factors contribute to a diminished capacity to formulate appropriate interventions which increase the risk of future injury.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

According to the observations and data secured from the various sites the typical DBCS is processing about 90,000 to 150,000 pieces of mail per shift. We occasionally saw machine throughput listed at about 200,000 per shift, but none of the machines we directly observed or video taped were working at this pace. Volumes reported during interviews indicated that a few years ago mail volumes in the 200,000+ range were routine. Injury levels appear to have dropped over the last 2 to 3 years in conjunction with the reduction in volume. This relationship will need to be reassessed as inaccuracies in the Postal recordkeeping program are corrected.

Preliminary NIOSH Revised Lifting Equation (RLE) calculations were performed using the frequencies observed at several of the investigated sites. These calculations produce a Cumulative Lifting Equation (CLI) of about 0.7 to 1.5. A value of 1 or lower is generally considered a level where most workers can perform the task with a minimal risk of injury. If the same calculation is performed, using frequencies similar to the values from a few years ago, the CLI is much closer to 3, which is a level that NIOSH indicates will likely produce injuries to a large portion of the working public.

Increasing the mail volumes per machine to the levels of a few years again is a real possibility since the postal service is instituting a number of initiatives such as eliminating one day of delivery, on-going consolidation of carrier routes, and the use of multiple box mail facilities. The likelihood of greatly increased throughput and repetition is additionally increased by the development of a new generation of sorting machines that process mail at an even faster pace. Without appropriate interventions in the design of

these machines and the DBCS process, there is an increased risk of injury as the volume of mail per machine is increased.

Organizational Structure: Structural Integrity of Mail Trays

Mail trays, both plastic and cardboard, are not sturdy enough for some of the loads handled, especially at the feeder station. Loads heavier than about 18 to 24 pounds will cause the tray to sag and some trays are compromised to the point where even lighter loads cause sagging. Tray sagging requires the worker to lift the tray higher than would other wise be necessary and to use force to stabilize the contents so they do not spill out.

Possible Control Options of Ergonomic Risk Factors

Some simple and isolated ergonomic related risk factors can be eliminated or reduced by implementing a single task specific means of abatement. When evaluating cases such as this that involve capital intensive machinery and complicated processes with multiple risk factors generally they are best addressed by means of specific and programmatic components, as part of a comprehensive ergonomics program. These components include accurate injury and illness record keeping, medical management and treatment for workers suffering work related injuries, work place analysis of jobs and tasks to assess hazards and steps to abate them, engineering, administrative and work practice controls or actions to eliminate or reduce the hazards, and education and training of workers and management. If an ergonomic risk factor is to be addressed on an incremental basis to determine the effectiveness of a specific control strategy believed likely to provide a protective solution, it is important to track and evaluate the effectiveness of the results in a timely manner and to implement additional control measures if initial controls fail to eliminate or reduce worker exposures.

Task Specific Interventions

The evaluation of the Delivery Bar Code Sorter work station suggests that there are a number of specific measures that can positively address these hazards. They involve the use of engineering, administrative, and work practice controls. The following actions should be considered when dealing with these conditions.

Engineering Controls:

Controls Applicable For Feeder and Sweeper Tasks

- Provide beveled-edged anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.

- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.

- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process. This may include a scheduled preventive maintenance program or another program where workers can request new cutting blades when they feel it is needed. If the request program is to be used, workers should be trained as to when and how the request is made.

- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.

- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

- The current machines all are right shoulder intensive. Future engineering changes should consider alternative postures or motions that would enable variation in whole body movement patterns to provide rest and recovery periods.

Controls for Feeder Tasks

- Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also, ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide a height and tilt adjustable staging table, stand, or platform in the direct vicinity of the jogging table. It must be directly adjacent to the jogger and positioned so the worker can stand close to it. It could be in line with the jogger or perpendicular to the jogger. It should be height adjustable so short and tall workers can place trays without torso bending, minimize exertion of shoulder or arm force to lift the tray up to the stand, and maintain the elbows close to the body. It should be tilt adjustable so the tray is angled toward the worker. This will allow workers to remove mail from the tray while minimizing wrist deviation and eliminating the need to lift mail up and over the sides of trays. An example of such a staging table is shown in Figure 10. Current staging tables could be modified to tilt the mail tray towards the employee.

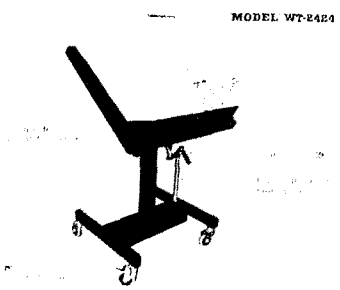


Figure 10 This stand moves easily around the work area, is height adjustable and tilts for easy access to tray contents

- Reduce the depth workers must bend and reach when dealing with transport devices. Provide height adjusting floors for APCs, BMC, nutting trucks and hampers or permanently raise the level of the floor. Limit the use of hampers unless they are the canvas type and have shock cords to automatically raise the floor as weight is removed or have some other sort of height adjustable mechanism. The orange hampers are not suitable for use with trays which require the use of two hands for removal unless they have a false bottom that raises the tray to about waist height. Figure 11 shows one mechanism which uses springs to automatically raise the level of materials within the device. As the weight is reduced by removing product the level of the floor is raised. This type of mechanism could be used on any kind of transport device.

Figure 11 - Height adjustable bottom raises as load is removed so load height is maintained to minimize torso bending.

- If side rails are used on conveyor system, they should be removed at positions where worker must access trays of mail. A cutout or open space in the railing system, should be provided so workers can grasp the hand cutout and pull the tray close to their body before lifting.

- Develop a sturdier tray system for heavier mail. Lab tests, with a limited number of MM trays (corrugated plastic as well as cardboard), show deflection and folding when loads in the range of 18 to 24 pounds are moved. Loads which are heavier than about 25 pounds create significant deflection and tend to fold in towards the middle. Heavier loads should either have a sturdier tray or perhaps could be double trayed to provide more support. Tests using double trays showed no defections when 29 pounds of mail was added and carried.

Controls for Sweeper Tasks

- Provide a second set of 1226F racks for all DBCS that are to be used for DPS sorting and ensure that there is adequate space to properly place these racks. This will reduce the number of trays that are lifted to down stack the racks onto other transport devices such as nutting trucks and will reduce the number of deep torso flexions performed on DPS sorts. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.

- If a second set of racks can not be incorporated, develop a new cart for movement of mail between 1st and 2nd pass. This cart would need to fully support all trays in the proper order and must be height adjustable to minimize elevated reaches and torso bending. A device similar to that shown in Figure 12 is already in use at several postal sites and could be easily modified for use at the DBCS. At some sites, especially those using a 3 tier sorter, a nutting truck or open, flat-bed cart, has been used for this purpose as a collection cart. The hazard of this process would be greatly reduced by increasing the height of the bed or the addition of a height adjustable bed.

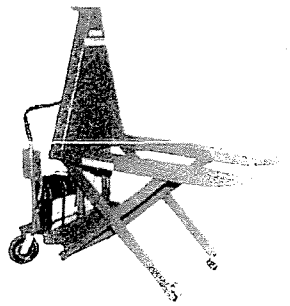


Figure 12 Example of a height adjustable device will allow most lifts to be performed at a desirable destination height.

- Investigate the feasibility of lowering the overall height of the 1226F racks. Lowering the rack height by a few inches can be of benefit to shorter workers, especially when they place trays to the top of the rack. This only slightly increases the hazard to taller workers. This intervention was seen in one of the sites visited and was reported during interviews to have reduced the stress of the task somewhat for shorter workers with no increase in complaints from taller workers. Preliminary calculations indicate that lowering the rack tiers by 2 inches each would allow a larger percentage of workers to work at or below shoulder height, but would only increase torso flexion for a 6 foot worker by about 11 degrees, which would not raise the compressive levels above the Back Compression Design Limit established by the Michigan 3D Static Strength Prediction Program. This intervention would be particularly advantageous at 3 tier DBCS machines. The racks associated with these sorters only use 3 of the 4 shelves during the collection process. Removing one of the shelves would allow rearrangement that would place more of the shelves at ergonomically desirable heights. Elevated reaches could be limited by lowering the upper shelves and lower shelves would still be at acceptable heights.

- Investigate lowering the front of the 1226F racks to reduce the upward tilt. This will reduce the overall height that mail must be lifted to and should not significantly affect the stacking of the mail. Currently, almost all mail falls forward in the tray and must be pushed back up when more mail is added. Also four tray position racks in use in some locations do not have a backward tilt and seem to position mail in a manner similar to that seen with the 1226F racks.

- Evaluate the cam stops on the back of the 1226F racks to determine if a better design is possible or if the cams could to be removed. The force necessary to pull the drawers out is seldom more that a few pounds without these stops. One facility had a large percentage of their racks that had the stops removed and there were no reports of problems with the racks falling over. Perform a set of tests in

which average mail loads are placed in the drawers at varying positions and determine if the cams are necessary as a safety precaution.

- Replace the center glide system on the 1226F racks. Even when new, this glide system is wobbly and relies on clean bearings to properly function. Many racks in the system have a dual track arrangement that utilizes fiber wheels on each side of the tray. This is a much more stable system, is easier to clean, and has fewer moving parts that need to serviced.

- Use systems that allow each drawer to be pulled out separately. Discontinue the use of the drawer system that contains four trays per drawer. Having all four trays come out at once limits access and increases the use of awkward postures.

- Evaluate the process for sleeving trays from the 1226F racks to determine the physical stress workers experience when performing this task. Provide access to a sleeving table, shelf or rack if the evaluation determines this would decrease the physical stress on the workers and not increase the handling of trays.

- Ensure that the electrical and mechanical components of the DBCS machine are of good quality and function properly to eliminate machine reading errors. It was reported that some of the rollers and other parts in the sort stackers were being replaced with inferior parts that were not capable of properly moving and sorting the mail. These reports indicated that the new parts could not properly stack the mail in the pocket to the desired stacker depth of 75%.

- Remove or improve the portions of the TMS conveyor that are non-functional. Remove conveyors that are on top of racks unless a functioning TMS system is used to transport the filled trays to their final destination. If trays are merely placed on the conveyor so they can be removed at the end of the sort line, the conveyor should be removed since this process increases the number of lifts to elevated locations by as much as double. Filled trays should be removed from the back of the sort racks and placed directly on the destination transport cart.

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.

- According to USPS documentation, the DBCS machines were originally designed for automated sweeping methods. Since at least 1995, the 1226F racks and manual sweeping were provided as an "interim solution" for mail transfer. Since it appears that manual transfer is now the permanent solution, it is recommended that the USPS national engineering staff redesign the process for manual sweeping. The stacker bins and the 1226F racks need to be redesigned to accommodate the worker. Consider future DBCS machine and 1226F rack modifications to include: reducing the overall height of the top pocket, reducing the depth of the bottom pocket and improving sightline and access. Additionally, the interviews revealed that the 3 tiered DBCS machines are preferred by workers

since the top tier is lower, the bottom tier is higher, and pockets are taller and have better access.

Work Practice Controls

Controls for both the Feeder and the Sweepers

- The workers should only move as much mail as they can comfortably hold while supporting majority of the mail with the fingers. Generally, they should not move more than half a tray of mail at a time.

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur, but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.

- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

- Schedule rotations between feeder and sweeper positions during the DPS to ensure that the initial feeder on the first pass does not begin the second pass as the sweeper. This will prevent the same mail clerk from performing the most physically demanding tasks.

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.

- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.

- Discourage the use of loading arrangements where trays are located at the back of the cart and must be accessed by the use of extended reaches. Place all trays in carts so one end and hand cutout is at the front of the cart. These trays can be pulled close to the worker prior to lifting.

- If a single worker performs both the feeder and sweeper tasks, ensure that the work load is such that the worker can allow the feeder to run out while the sweeping occurs.

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assemblies to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.

- Determine the pull forces for drawers, forces for opening the latches on the webbing restraints, opening and closing gates, and push and pull forces to maneuver items around the work floor. Use the forces determined to develop appropriate specifications for these items.

- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also, ensure that the brakes are easy to engage and hold firmly during loading tasks

- Ensure that the racks and drawers have adequate space above the drawers to handle the size of mail and the clerk's hands.

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts including the augers, rollers, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Controls for Feeder Tasks

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf; place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent

to the feeder and to load without pushing across the body and using extended reaches and forward bending.

- Develop a process or procedure to limit the weight of trays containing bulk business mail. Coordinate with shippers to limit the size of trays. For instance, use two small trays individually instead of place them in a larger tray. Trays should generally not weigh more than about 25 pounds if they are to be handled by a single person.

- Develop a method to identify heavy trays. Generally, trays that weigh more than about 25 pounds should be tagged or marked and should not be handled by a single person.

- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.

- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.

Controls for Sweeper Tasks

- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

- Assess all Tour 3 and Tour 1 sort plans and, where possible, consolidate bulky, heavy, or high-volume mail to the middle tiers during the primary sort.

- Modify sort plans (especially primary sort) for four tier machines to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.

- Limit the amount of trays are stacked on top of the 1226F racks to no more than 2 trays high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226 racks once they reach 2 high.

- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more

force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.

- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide, as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also allow for maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

- Evaluate the rack locations to ensure that there are additional access points to the back side of the racks. This will minimize the need for up stacking and reduce travel distance for the sweeper.

- Use an empty small tray as a spacer in a large tray instead of using rubber bands to secure mail.

- In the final pull down of trays, it is recommended to combined trays whenever possible so long as the total tray weight does not exceed about 25 pounds and there is adequate hand clearance. This will reduce the numbers of trays being lifted during a shift.

Administrative Controls:

- Ensure that there is adequate space provided for all placements, storage, and maneuvering of all DBCS machines, racks, and transport devices, as outlined in the postal documentation. This will include space justification for high volume times.

- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also, allow adequate aisle space for maneuvering of the loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, and the volume and the mail weight and seek employee input when developing clerk rotation schedules.

- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. These folks could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

- Work patterns have changed considerably over the last several years. Tour 2 essentially no longer exists from a DBCS standpoint. Adjust staffing to better align with current work patterns.

    - Adjust upper management staffing so there is regular onsite presence during Tour 3 and Tour 1 consistent with percentage of workers who work that shift. This includes safety, computer logistics support, maintenance (as necessary), and administrative support.

    - Ensure management staff on all tours are knowledgeable of ergonomic risk factors.

    - Investigate shifting sort schedules so more workers are on shift during daytime hours when the majority of management is present. Productivity and moral have been shown to be higher on day shifts.

    - Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).

    - The pressure to "get the mail out" is pervasive and speed required at the end of runs to meet the dispatch deadlines often forces workers to disregard proper lifting techniques and procedures. Staff assignments and expectations should be adjusted for this peak workload.

- Train all workers to fully open all webbing and gates to improve access to mail trays. Instruct workers to pull trays toward their body and then lift rather than reaching to the back of transport device. This will minimize reaches, torso bending and twisting and improve access to hand holds.

- Train workers to keep the load close to their body at all times.

- Instruct sweepers to push the rack drawers in prior to lifting trays up onto the top of racks.

- Train workers responsible for loading trays of mail on transport devices to never place fully loaded mail trays in the bottom of hampers. They should be trained to always use some kind of false bottom to raise the level of the load to about waist height.

Programmatic Interventions

The problems identified during the DBCS evaluation are complicated and not easily addressed with a single intervention. As a result, a solution to the hazards identified will likely consist of a combination of various interventions. To make this work there will need to be improved communication between all entities involved in the process on both the local and national level. A comprehensive ergonomics program (such as the Postal Ergonomics Risk Reduction Program) should be redeployed and visibly supported to provide a mechanism of understanding, identification, evaluation, and improvement. Sites that currently have, or historically had, good ergonomics committees and programs had better understanding of the problems and better acceptance of proposed solutions.

The following components of a comprehensive program should be implemented to provide a foundation for those interventions previously identified in this report. They also will be the foundation for development of new solutions as the process continues to develop over the coming years.

Recordkeeping

- Recordkeeping is an important factor in discovering where problems are occurring and in providing accurate data for safety and health personnel to address these problems in a timely manner.
    - Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury as these actions promote non-reporting of injuries and encourages clerks to seek treatment without employer notification of the clerks' injuries.
    - Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
    - Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
    - Evaluate disciplinary protocol which states that if a MSD is not reported at the first sign of discomfort or pain, the clerk will be disciplined for not reporting. Because MSDs usually do not have sudden or well defined onset, the course of cumulative trauma signs and symptoms do not "fit" into this method of reporting. This negatively affects the attitude of the clerks in reporting MSDs.

- Ensure that Human Resource Management receives ergonomics training in the tasks that the DBCS clerks perform to help management determine work-relatedness.

- Review OSHA recording criteria with the record keepers and ensure that they understand the difference between an OSHA recordable and a Workers Compensation compensable injury.

- Ensure that the workers who report work related injuries have their work duties and environment evaluated by the supervisor or the District Safety Manager to help decide whether or not the work exposure either caused or contributed to the resulting condition. Ensure there is a record of the assessment.

- Ensure that all clerks are trained in signs and symptoms of ergonomic related injuries and illness so they can recognize and report these conditions at an early stage of development. Ensure that they understand the reporting procedures, including who and when to report.

Training

- Provide ergonomics training by a knowledgeable instructor to <u>all</u> workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should regularly be provided to key individuals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.

- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are transferred to a new task. Ensure that the training is specific to the risk factors of the job tasks.

- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.

- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the feeder and sweeper positions.

Effective Committees to Identify and Address Hazards

Ergonomics committees provide a mechanism for continual communication and understanding of the hazards of the task and proposed interventions. There was improved recognition and understanding of hazards in those sites that currently have, or historically had, good ergonomics committees. It is essential that there is communication between all major players in the DBCS process including; workers, management, unions, equipment suppliers, and USPS Headquarters.

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management, and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.

    - Ensure that the committee has representation from management, all DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.

    - Designate an ergonomics committee chair and provide the chair with access to the safety committee, local management, and, if needed, Headquarters management and engineering support.

    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.

    - Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and can not be addressed locally. Therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.

    - Ensure that committee members have easy access to the postal database of ergonomic solutions.

- Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.

- Disseminate information from the ergonomics committee to all workers.

- Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction

- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

- Evaluate control effectiveness to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.

- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.

- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

- Develop a recognized procedure to document musculoskeletal disorders or injuries and ensure that all supervisors are trained about their role in this procedure.

- Ensure clerks are encouraged to report injuries at an early stage so they can be addressed before they develop into long term disability.

- Ensure that nursing staff and supervisors assist the clerk in return to work placement to ensure that he/she is not placed in a task that may aggravate an injury. Nursing staff and supervisors must understand both the work task and the principles of ergonomics so they can provide appropriate assistance in developing a return to work plan.

- Ensure that all staff involved in the medical management process including; Human Resource personnel, physicians, occupational nurses, and onsite nurses

are familiar with the work process and the ergonomic issues so they can provide assistance with work site ergonomic risk assessment and treatment proposals.

Need for Future and Continuing Engineering Controls

The DBCS machine itself has inherent flaws, primarily for shorter workers. These flaws, will be negated to some extent by many of the interventions outlined in the preceding sections. It is understood that this is a cost intensive process and the delivery of mail brings in a dwindling revenue stream, but the fundamental operation of this machine must be addressed. It was noted in USPS documentation that the current iteration of the DBCS was "interim solution" method. Unfortunately this "interim solution" has been in place for over a decade. If effective improvements are to be made to this machine it will be necessary to use a team effort to insure that changes are appropriate and accepted. This team must consist of DBCS operators, labor, management, and engineering from both headquarters and the field to develop an acceptable ergonomic solution that will eliminate or reduce ergonomic risk factors addressed in this report.

U.S. Department of Labor

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September 14, 2010

Mr. Don E. Jacobus
Senior Plant Manager
US Postal Service
Seattle Processing and Distribution Center
10700 27th Ave. S.
Seattle, WA 98168

Dear Mr. Jacobus,

The Bellevue OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorters (DBCS) at your facility, located at 10700 27th Avenue South; Seattle, WA 98168. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 309096089) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on August 11, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds.

This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.

- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:

- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:

- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:

- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.

- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching
Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches
Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.
- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions
Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding
Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the

least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Ergonomic Risk Factor: Repeated Extended reaches
Sweepers are required to reach across the staged trays in front of the 1226F racks.

Possible Control Options:

- Remove empty staged trays from the aisle between the 1226F racks and the stacker bin pockets. This increases the reach distance to load the mail tray in the rack drawers. Provide other closely accessible staging areas.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive
Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many

interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward

postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the Feeder and Sweeper positions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.

- Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
- Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.
- Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
- Ensure that committee members have easy access to the postal database of ergonomic solutions.
- Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
- Disseminate information from the ergonomics committee to all workers.
- Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.

- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to <u>all</u> workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (425) 450-5480.

Sincerely,

David Baker
Area Director
Bellevue Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Tampa Area Office
5807 Breckenridge Parkway, Suite A
Tampa, Florida 33610
(813) 626-1177 FAX: (813) 626-7015
website: www.osha.gov

Reply to the Attention of: **Area Director**

September 14, 2010

Ms. Donna Jewett
Plant Manager
US Postal Service
Orlando Processing and Distribution Center
10401 Post Office Blvd.
Orlando, FL 32862-9997

Dear Ms. Jewett,

The Tampa OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorter (DBCS) at your facility located at 10401 Post Office Blvd, Orlando, Fl 32862. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 313890022) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on September 22, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds.

This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.

- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches

Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:

- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures

The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:

- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures

Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:

- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.

- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching
Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches
Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.
- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions

Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full

extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions..

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the feeder and sweeper positions.

Organizational Structure: Machine Layout

With space constraints carts and racks are pushed or pulled longer distances and more rearrangement is required. There is less room to lift, move and off-stack materials which increases frequency of awkward postures.

Possible Control Options

- Ensure that there is adequate space provided for all placements, storage, and maneuvering of all DBCS machines, racks, and transport devices, as outlined in the postal documentation. This will include space justification for high volume times.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information.
- Provide unrestricted aisle space to maneuver and place the two sets of racks, or other transport devices for the second pass. Provide staging space behind the 1226F racks for a complete second set of racks allowing easy off-stacking for the second pass.
- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also allow for maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will

provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.
    - Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.
    - Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
    - Ensure that committee members have easy access to the postal database of ergonomic solutions.
    - Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
    - Disseminate information from the ergonomics committee to all workers.
    - Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.
- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors; including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to all workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (813) 626-1177.

Sincerely,

FOR **Leslie L. Grove III**
Area Director
Tampa Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Madison Area Office
4802 East Broadway
Madison, WI 53716
Phone (608) 441-5388 Fax (608) 441-5400
Website www.osha.gov

September 14, 2010

Mr. Charles Sciurba
Plant Manager
U.S. Postal Service
Madison Processing and Distribution Center
3902 Milwaukee St.
Madison, WI 53714

Dear Mr. Sciurba:

The Madison OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorters (DBCS) at your facility, located at.3902 Milwaukee St., Madison, WI 53714. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 313130981) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on October 27, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds. This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.
- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to de-sleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.

- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:
- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:
- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:
- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.
- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching

Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches

Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.
- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.

- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions
Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide maintenance to <u>all</u> cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks

and other transport devices between the first and second DPS pass without obstructions.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the

same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.

- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the feeder and sweeper positions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.
    - Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.
    - Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
    - Ensure that committee members have easy access to the postal database of ergonomic solutions.
    - Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
    - Disseminate information from the ergonomics committee to all workers.

- Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.

- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. Proper maintenance should make the current intervention of attaching strings or chains to the cam unnecessary. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly

maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to all workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a

beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to contact me at (608) 441-5388.

Sincerely,

for Kimberly Stille
Area Director
Madison Area OSHA Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Columbia Area Office
1835 Assembly Street Room 1472
Columbia, SC 29201-2453
Phone (803) 768-5904
Fax (803) 765-5591
Website www.osha.gov

September 14, 2010

Mr. Jason Dechambeau
US Postal Service
West Columbia Processing and Distribution Center
2001 Dixiana Road
West Columbia, SC 29172

Dear Mr. Dechambeau,

The Columbia OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorters (DBCS) at your facility, located at 2001 Dixiana Rd, Columbia, SC 29172. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 308328418) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on September 15, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds. This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.
- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and Possible Control Options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.

- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:
- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:
- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:
- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.
- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching
Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches
Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and

extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.

- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- The current tray management system should be improve to handle the full volume of mail or removed. It should either be functioning properly so trays are not manually removed from the end of the conveyor or it should be removed and replaced with standard 1226F racks and the process performed as recommended in postal training.

Ergonomic Risk Factor: Repeated, Forceful Exertions

Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer

from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also allow for maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions

Ergonomic Risk Factor: Repeated Extended reaches
Sweepers are required to reach across the staged trays in front of the 1226F racks.

Possible Control Options:

- Remove empty staged trays from the aisle between the 1226F racks and the stacker bin pockets. This increases the reach distance to load the mail tray in the rack drawers. Provide other closely accessible staging areas.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive
Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS

Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times.

Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the Feeder and Sweeper positions.

Organizational Structure: Machine Layout

With space constraints carts and racks are pushed or pulled longer distances and more rearrangement is required. There is less room to lift, move and off-stack materials which increases frequency of awkward postures.

Possible Control Options

- Ensure that there is adequate space provided for all placements, storage, and maneuvering of all DBCS machines, racks, and transport devices, as outlined in the postal documentation. This will include space justification for high volume times.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information.
- Provide unrestricted aisle space to maneuver and place the two sets of racks, or other transport devices for the second pass. Provide staging space behind the 1226F racks for a complete second set of racks allowing easy off-stacking for the second pass.
- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also allow for maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduce by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.
    - Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.
    - Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
    - Ensure that committee members have easy access to the postal database of ergonomic solutions.
    - Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
    - Disseminate information from the ergonomics committee to all workers.

- Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.

- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained.
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to

ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.

- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to all workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (803) 765-5904.

Sincerely,

Suzanne M. Street
Area Director
Columbia Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Pittsburgh Area Office
William Moorhead Federal Building, Room 905
1000 Liberty Avenue
Pittsburgh, PA 15222
(412) 395-4903
(412) 395-6380 FAX
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September 14, 2010

Mr. Robert Jones, Acting Plant Manager
US Postal Service
Pittsburgh Processing and Distribution Center
1001 California Ave
Pittsburgh, PA 15290

Dear Mr. Jones,

The Pittsburgh OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorter (DBCS) at your facility located at 1001 California Ave Pittsburgh, PA 15290. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 312631369) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on July 14, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight

Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds. This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at about waist height to allow the elbows in close to the body and without any torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.

- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.
- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and Possible Control Options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:

- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:

- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.
- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching
Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches

Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.
- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions

Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Increases in Repetition: Management has circulated and enforced a memo which has increased the frequency of all tasks. This instructs works to clear pockets before they reach 50% full, instead of the USPS DBCS/DPS Methods and Support Equipment Guide specification of 75% full. Any increase in the frequency or duration of exposure to hazardous risk factors will increase the hazard associated with performance of any sorting task.

Possible Control Options:

- Return to the USPS DBCS/DPS Methods and Support Equipment Guide specification of 75% full.
- Train workers to let pockets fill to the 75% level before removing mail, use two handed grasping to move larger amount of mail less often.

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority

of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.

- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the Feeder and Sweeper positions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.

- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to <u>all</u> workers including temporary and casuals on an annual basis so they can effectively

participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.

- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (412) 395-4903.

Sincerely,

Robert Szymanski
Area Director
Pittsburgh Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Providence Area Office
380 Westminster Mall, Room 543
Providence, RI 02903
Phone (401) 528-4669
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September 15, 2010

Mr. Michael Haggerty
US Postal Service
Providence Processing and Distribution Center
24 Corliss Street
Providence, RI 02903

Dear Mr. Haggerty,

The Providence OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorters (DBCS) at your facility, located at 24 Corliss Street Providence, RI 02903. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 312343189) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on August 25, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds. This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.
- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.

- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
  Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:
- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:
- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:
- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.
- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching

Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches

Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto

other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.

- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.

  Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions
Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules

should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist

with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the Feeder and Sweeper positions.

Organizational Structure: Machine Layout

With space constraints carts and racks are pushed or pulled longer distances and more rearrangement is required. There is less room to lift, move and off-stack materials which increases frequency of awkward postures.

Possible Control Options

- Ensure that there is adequate space provided for all placements, storage, and maneuvering of all DBCS machines, racks, and transport devices, as outlined in the postal documentation. This will include space justification for high volume times.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information.
- Provide unrestricted aisle space to maneuver and place the two sets of racks, or other transport devices for the second pass. Provide staging space behind the 1226F racks for a complete second set of racks allowing easy off-stacking for the second pass.
- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also allow for maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.

- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to <u>all</u> workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of

workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.

- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (401) 528-4669.

Sincerely,

Patrick Griffin
Area Director
Providence Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration

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(715) 832-1147 FAX

Website www.osha.gov

September 15, 2010

Mr. Steven Zellmer
US Postal Service
Mankato Processing and Distribution Center
851 Summit Ave
Mankato, MN 56001

Dear Mr. Zellmer,

The Eau Claire OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorters (DBCS) at your facility, located at 851 Summit Ave Mankato, MN 56001. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 313175606) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on July 20, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds.

This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.

- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:
- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:
- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:
- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:
- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.
- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching

Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches

Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and

maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.

- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions

Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the

least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.

- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).

- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the Feeder and Sweeper positions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.
    - Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.

- Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
- Ensure that committee members have easy access to the postal database of ergonomic solutions.
- Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
- Disseminate information from the ergonomics committee to all workers.
- Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.

- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.

- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to <u>all</u> workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (715) 832-9019.

Sincerely,

Mark Hysell
Area Director
Eau Claire Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Braintree Area Office
639 Granite Street 4th Floor
Braintree, MA 02184
Phone (617) 565-6924
Fax (617) 565-6923
Website www.osha.gov

Thursday, September 16, 2010

Mr. Arnold Williams
Plant Manager
Mr. Mickey Beattie
Safety Manager
S.E. New England District
U. S. Postal Service
Wareham Processing and Distribution Center
25 Tobey Road
Wareham, MA 02571

Dear Mr. Williams and Mr. Beattie:

The Braintree OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorter (DBCS) at your facility located at 25 Tobey Rd, Wareham, MA 02571. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy, nine sites, including yours, were visited between July and November, 2009. OSHA's inspection (No. 312108244) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on August 28, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight

Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds. This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.

- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.
- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays.

Possible Control Options:
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:
- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:

- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogging table. Shorter workers have a greater risk.

Possible Control Options:

- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogging table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:

- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.
- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching

Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches

Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tiers stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.
- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions

Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.
- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space to allow for staging of empty 1226F racks and other transport devices. Also allowing for the maneuvering of loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogging shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part

since the sweeper and feeder job have somewhat different emphasis on the part of the body used.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.

- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the feeder and sweeper positions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.
    - Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.
    - Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
    - Ensure that committee members have easy access to the postal database of ergonomic solutions.
    - Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
    - Disseminate information from the ergonomics committee to all workers.

- Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.

- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.
- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least

possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to all workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.
- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and

offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (617) 565-6924.

Sincerely,

Timothy S. Ivey

Brenda Gordon
Area Director
Braintree Area Office

Enclosure

U.S. Department of Labor

Occupational Safety and Health Administration
Calumet City Area Office
1600 167th St. Suite 9
Calumet City, Il 60409
Phone (708) 891-3800
Fax (708) 862-9659
Website www.osha.gov

Mr. James Bell
Manager, Safety
US Postal Service
Chicago Processing and Distribution Center
433 W. Harrison St.
Chicago, Il 60607

Dear Mr. Bell,

The Calumet City OSHA Area Office received a formal complaint concerning the operation of the Delivery Bar Code Sorters (DBCS) at your facility, located at 433 W. Harrison, Chicago, Il 60607. The complaint was one of over 170 ergonomic related complaints filed with OSHA against United States Postal Service (USPS) Process and Distribution Centers (P&DCs) which operate DBCS machines. As part of OSHA's investigation strategy nine sites, including yours, were visited between July and November 2009. OSHA's inspection (No. 312596919) and subsequent evaluation of your injury and illness logs (OSHA Form 300) was initiated on July 7, 2009, and revealed significant ergonomic risk factors to the DBCS.

The DBCS operations were observed and videotaped, and interviews with DBCS mail processing clerks and managers were conducted. The findings from the inspection are consistent with issues present at the other P&DCs OSHA inspected. At this time, it is not considered appropriate to invoke or cite any OSHA standard or Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act. Currently no citation regarding these concerns will be issued.

In the interest of workplace safety and health, however, I recommend that you take voluntary steps to address these issues. Below is a summary of our findings as well as possible control options you may utilize to correct the deficiencies which were identified.

Feeder and Sweeper Stations:

Ergonomic Risk Factor: Repeated Bending and Twisting, While Lifting Heavy Weight
Repeated bending at the waist to lift filled mail trays from lower levels of transport devices (APC, GMPC, nutting truck, hampers [also known as pumpkins, plastic or orange hampers] or 1226F racks). Weighed mail trays ranged from 16 pounds up to 70 pounds.

This risk is greater when heavier mail trays are lifted, such as the trays of heavier Bulk Business Mail (BBM).

Possible Control Options:

- Reduce the distance clerks must bend and reach into transport devices (APCs, BMC, nutting trucks and orange hampers) when removing trays. Provide false bottoms or height adjusting platforms for these devices.
- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices and to lift them from lower levels of transport devices when feeding second pass.
- If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Limit the weight of BBM trays or identify those trays that are heavier than can be safely moved by a single person. Generally, trays that weigh more than about 25 pounds should not be handled by a single person.

Ergonomic Risk Factor: Repeated, Forceful Gripping

Repeated, grasping bundles of mail with one hand to move the mail. This risk is further increased by the use of bent wrist posture.

Possible Control Options

- Move mail by cupping either end of the bundle and supporting the weight of the mail rather than grasping a bundle of mail with one hand.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Ergonomic Risk Factor: Generalized Body Fatigue

Clerks are on their feet for the full period of their shift. This creates a lack of opportunities for full body rest and recuperation which increases the risk of injury.

Possible Control Options:

- Provide a seat, lean bar or foot railing where the sweeper can take a micro break when there is no active sweeping or feeding tasks being performed.
- Provide beveled-edged, anti-fatigue matting or shoe inserts at all DBCS stations where workers are on their feet for long periods of time. Replace antifatigue mats when they become worn to less than 3/8 inches thick. All antifatigue mats should be at least 3/8 inches to 5/8 inches thick.

- Relocate the stacker bin for miss-sorts from the far end to the front end of the sorting machine to reduce the walking distance needed to clear this bin.

Ergonomic Risk Factor: Repeated, Forceful Shoulder Exertions
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail into and out of trays. The repeated compressing of mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail increases repeated forceful shoulder exertion.

Possible Control Options:

- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.
- Provide job specific ergonomics best practices training to all clerks and feeders on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks. Workers should be trained to lift mail from the tray, or sorting slot by using two hands, placing the fingers under the mail.

Feeder Station: Risk Factors

The following risk factors and possible control options deal specifically with the feeding task.

Ergonomic Risk Factor: Repeated, Forceful Extended Reaches
Force must be exerted on either end of a bundle of mail to maintain integrity while lifting and moving mail from the jogger shelf to the jogger. Extended reaches increases the force exerted by the shoulder.

Possible Control Options:

- Do not jog mail that is "clean" enough to be fed without jogging. Don't place the mail tray on the jogger shelf, place it on the jogger table and move the mail onto the feeder belt. This will allow the worker to place the mail tray directly adjacent to the feeder and to load without pushing across the body and extended reaches and forward bending.
- Provide and use staging table for mail trays.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Gripping
Repeated grasping bundles of mail with one hand to move it from the tray to the jogger, removal of rubber bands, and use of hand cutting tools to cut bands from the trays. Performing these tasks with bent wrist posture increases the risk of the task.

Possible Control Options:

- Minimize the use of rubber bands on small bundles of mail that will be resorted again at the new station. Use the small mail trays to hold small bundles.
- Provide mail preparation assistance to desleeve and remove the bands. Cull and prep the mail at a work station prior to transporting to the feeder station.
- Ensure that all cutting devices for cutting sleeve bands are sharp so as to minimize forceful exertion during the band cutting process.
- Modify staging tables so the tray tilts towards the employee. This will permit access to mail while maintaining straight, neutral wrist postures.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Extended Reaches
Feeders perform extended or overhead reaches with loaded mail trays to and from the upper levels of the transport devices, the staging shelf behind the jogger.

Possible Control Options:

- Use a staging table next to the feeder station to eliminate the extended reaching to the staging shelf behind the jogger. Only use the staging shelf for ancillary supplies and storage.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
The tray "flipping" technique requires a quick upward and outward lifting motion of the tray using shoulder flexion, a bent wrist, and finger force to propel the letters onto the jogger table. Shorter workers have a greater risk.

Possible Control Options:

- Reduce the awkward postures associated with "flipping" the mail by eliminating the use of the "flipping" technique.
- To eliminate the need for "flipping" use a staging table next to the feeder station and lift mail from the tray to the jogger table.
- The worker should only move as much mail as they can comfortably hold while supporting the majority of the mail with the fingers. Generally, don't move more than half a tray of mail at a time.

Ergonomic Risk Factor: Repeated, Forceful Exertions with Awkward Postures
Many trays are not capable of handling the weight of the mail causing these to sag which requires the feeder to lift the tray higher. The risk to the shoulder and hand is increased as the hand is elevated.

Possible Control Options:

- Develop a sturdy tray for mail. Many trays sag badly when loads that are heavier than about 20 pounds are placed in it. This makes the tray much more difficult to handle.

- Remove trays from service when the structural integrity has been compromised and they are unable to hold the mail without sagging.

Sweeper Station: Specific Risk Factors

The following risk factors and possible control options deal specifically with the sweeping tasks.

Ergonomic Risk Factor: Repeated Bending and Reaching
Repeated trunk bending, often with twisting and extended reaching, to clear mail from the bottom stacker pockets, move mail from the stacker to the rack, place mail in the tray, clear jams, pull out the rack drawer, lift full trays from lower tier drawers and place them on carts or other transport devices.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the amount of torso bending needed to move trays onto other transport devices. If a second set of racks cannot be incorporated, use a nutting truck or open, flat bed cart with a height adjustable or elevated base for this purpose. Increasing the height of the bed of this device so the lower level is at about mid-thigh could make this device suitable for this purpose.
- Ensure that trays weighing more than 25 pounds are placed at a height to allow the elbows to stay in close to the body and with minimal torso bending.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.
- Modify sort plans (especially primary sort) for four tier machines, to minimize use of the bottom and top stacker bins. Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Ensure that the aisle between the racks and the stacker bin pockets is 36 inches wide as noted in the postal guidance and training manuals information. This assures the clerk will fully turn to reach from the bins to the drawers which will minimize torso twisting.

Ergonomic Risk Factor: Repeated Above Shoulder Reaches
Repeated above shoulder height reaches throughout the sortation process. Sweepers reach to the upper tier stacker pockets and upper 1226F rack drawers with bundles of mail, and reach to the top of the 1226F racks to lift loaded mail trays.

Possible Control Options:

- Provide a second set of 1226F racks for all DBCS machines that are to be used for DPS sorting and ensure that there is adequate space to properly place and maneuver these racks. This will reduce the number of trays that are lifted onto other transport devices and will reduce the number of deep torso flexions and extended above shoulder reaches performed. This is recommended in DBCS documentation and will greatly reduce the need for off stacking.
- Limit the height that trays are stacked on top of the 1226F racks to no more than 2 high. Utilize extra personnel such as rovers, sweepers or mail handlers to remove trays from the top of 1226F racks once they reach 2 high.
- Replace cardboard trays with the sturdy plastic trays in the heavy volume drawers that will be up loaded to the top of the 1226F rack. It takes considerably more force to pull a cardboard tray across a tray loaded with mail than it does to pull a similar plastic tray.
- Minimize repeated torso bending and extended reaches by allowing the stacker bins to fill to at least 75% full as per manufacturer guidance before emptying. Premature sweeping of sorted mail unnecessarily increases the frequency of forceful exertions and awkward postures of the clerk performing the sweeping activities.

Ergonomic Risk Factor: Repeated, Forceful Exertions
Sweepers are subjected to increase frequency of motions to clear jams due to inadequate maintenance and accumulations of dust.

Possible Control Options:

- Ensure that the DBCS machine is clean, free of dust accumulation, and has quality parts such as augers, roller, and belts. This will enable the machine to run efficiently and accurately. Proper functioning of the machine will allow clerks to reduce the number of jams cleared and frequency of stacker pocket clearing tasks.

Ergonomic Risk Factor: Repeated Forceful Pushing, Pulling, Carrying and Prolonged Holding

Sweepers perform the sweeping tasks using poorly functioning drawers. The tray must be manually supported during the deposit process or only partially pulled out leaving minimal space to place the bundle of mail. By only partially opening the drawer, the bundle of mail must be manually supported for additional periods of time with awkward wrist and shoulder postures while attempting to place the mail into the tray. The sweeper repeatedly compresses mail bundles in front of the body to maintain the bundle integrity while lifting and moving mail to the rack drawer. Force must be exerted to push and pull racks during DPS sorts. Shoulders, lower back, and lower extremities can be stressed when racks are difficult to move and maneuver.

Possible Control Options:

- Provide regular maintenance of all 1226F racks so drawers operate smoothly with minimum effort and provide proper support for the trays. This will allow for full extension of trays so all the space within the tray is accessible during the transfer

from the sorter pocket to the tray. Ensure that wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks.

- Provide maintenance to all cam stops and slide drawer assembly to ensure that all are in good working condition prior to the beginning of each Tour. This ensures that the drawer is functioning and reduces the forces needed to perform the task. Alternatively, investigate new designs for the 1226F rack that eliminates the cam mechanism.
- Ensure that there is unobstructed aisle space allowing for staging of empty 1226F racks and other transport devices. Also allowing for maneuvering of the loaded 1226F racks and other transport devices between the first and second DPS pass without obstructions.

Additional Concerns:

System Wide: Organizational Work System Structure and Processes

Work Processes: Right Shoulder, Arm and Hand Intensive

Feeding and sweeping tasks are predominantly a right shoulder, arm and hand intensive task. Feeding tasks include: reaching to the back of a cart to grab the tray handles, lifting a bundle of mail from the jogger shelf using one or two hands, and pushing a bundle of mail from the jogger to the feeder. Sweeping tasks include reaching into a pocket to lift the paddle and to push the mail forward so it can be lifted, placing the mail in the tray, pulling the full tray out of the rack, pushing the tray up onto the top of the rack, placing the trays into the transport devices with the labels facing towards the machine, and pulling the racks and carts around the work floor. There is little variation in these tasks offering the right shoulder, arm and hand minimal rest and recovery time. The majority of workers identified the right shoulder as painful. Concentrating the stress of the job to a single part of the body significantly increases the risk of injury.

Possible Control Options:

- Conduct a comprehensive field site ergonomics re-assessment in conjunction with headquarters, of the DBCS machines, equipment and tools using experienced short and tall stature mail processing clerks to see if additional variation of motions and body parts can be incorporated. For instance, redesign the DBCS machine to allow left handed operations to be incorporated into the system to provide periods of rest and recuperation. Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.

- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Work Processes: Extended Exposure to Risk Factors

The primary risk factors are forceful repetition, combined with awkward postures. Exposing workers to the same motions and postures for extended periods of time increases the risk of injury to the body part affected. This occurs when rotation times range from two hours to eight hours between the feeder and the sweeper or this can occur from being assigned to the same machine for extended periods of time. This exposes the team to the same loads, frequencies and awkward postures as determined by the sort plans for that specific DBCS machine.

Possible Control Options:

- Standardized rotations should be implemented to provide necessary rest and recovery time. Although USPS Headquarters' documents recommend rotation every 30 minutes, many interviewed workers suggested that this be increased to 45-60 minutes. There may be variation on when the rotation should occur but it should not be longer than 60 minutes. This will reduce the chance of overuse of a single body part since the sweeper and feeder job have somewhat different emphasis on the part of the body used.
- Develop a rotation schedule between different DBCS machines. Consider the quantity and composition of product run, sort plan, the volume and the mail weight and employee input when developing clerk rotation schedules.
- Evaluate other tasks that clerks are capable of doing and develop rotation schemes that could include the AFSM, SPBS, and manual sorting. Rotation schedules should provide for a variety of tasks which allow different muscle groups periods of rest and recuperation.

Organizational Structure: Increased Exposure to Risk Factors Caused by Increased Mail Volume and Throughput

Increasing mail volume and throughput increases exposure to forceful repetition and awkward postures. According to the tasks observed while on site the typical DBCS is processing about 90,000 to 150,000 pieces of mail per hour. Mail volumes on Sundays and holidays are much higher and often have insufficient staff to handle it. Mail may be stacked up to five trays high on top of 1226F racks during high volume times. Inadequate staffing increases the amount of weight lifted and the frequency of awkward postures used to move that weight. Any efforts to raise the mail processing levels will increase the physical risk factors and potentially result in significantly higher injury rates.

Possible Control Options:

- Adjust staffing levels or expectations of mail moved for periods of unusually heavy mail volume periods (Sunday nights, holidays and final pull down and dispatch).
- Provide staff (temps, clerks, or mail handlers) to assist with machines that are processing higher than normal mail volumes. This staff could be used to assist with pull down of full trays during the sort process, final sweep at the end of a pass, and final pull down at the end of a tour.

Organizational Structure: Lack of Management Recognition of Ergonomic Risk Factors

Many managers assigned to Tour 1 and 3 have minimal knowledge about the physical risks associated with performing DBCS tasks. It is very difficult to address problems, assign machines and implement effective controls when management lacks this understanding.

Possible Control Options:

- Ensure management staff on all tours has knowledge of ergonomic risk factors.
- Provide time for all DBCS supervisors to perform the task for which they are supervising. Supervisors should have at least a full shift of hands on work at both the feeder and sweeper positions.

Organizational Structure: Comprehensive Ergonomics Program

While some ergonomic risk factors can be eliminated or reduced by implementing a single means of abatement, in most cases a process using the following components will provide an effective method for addressing the risk factors. Components of a comprehensive ergonomics program generally include accurate injury and illness recordkeeping, medical management, maintenance, work place analysis of jobs and tasks to address hazards and the steps to abate them, education and training of workers and management, and In-Plant Support.

Recognition and abatement elements have been discussed in the prior section of this report. Additional components include:

- Resume a comprehensive ergonomics program to provide a mechanism of continual communication between workers and management and between the local units and the USPS Headquarters. This will facilitate identification of hazardous situations and development of solutions. Create and implement an ergonomics committee.
    - Ensure that the committee has representation from all parties. There should be representation by management, DBCS operators, maintenance, safety, medical providers or health, and engineering and In-Plant Support.
    - Designate an ergonomics committee chair and provide them with access to the safety committee, local management, and if needed Headquarters management and engineering support.
    - Demonstrate management commitment by allocating the necessary resources to the ergonomic committee. The committee activities may

include regularly scheduled inspection tours, analysis of tasks, meetings, investigation of new processes or tools, training, and evaluation of employee complaints and suggestions.
    - Develop effective communication channels between the ergonomics committee and the site management and the Office of Safety and Risk Management at USPS Headquarters. Many problems identified by the ergonomics committee are more involved and cannot be addressed locally therefore the issues may need to be communicated to the appropriate person(s) at the USPS Headquarters Office of Safety and Risk Management. There should also be an effective communication feedback loop from USPS Headquarters to the local facility.
    - Ensure that committee members have easy access to the postal database of ergonomic solutions.
    - Develop protocols for the committee to investigate worker injury, illness or first aid reports. Track and trend OSHA 300 Logs and other existing records so as to determine the scope and characteristics of problems.
    - Disseminate information from the ergonomics committee to all workers.
    - Develop a facility wide mechanism for workers to report ergonomics related problems and a mechanism to notify the reporting individual of the outcome or intended direction.
- Promote clerk involvement to improve workplace conditions surrounding the DBCS machines.
- Evaluate the effectiveness of controls proposed to eliminate or reduce the ergonomic risk factors identified at each DBCS machine.

Recordkeeping

- Promote a climate for accurate and timely reporting of musculoskeletal disorder injuries. Supervisors should *not* encourage clerks to "work through" the pain, diminish the injury or discourage the reporting of the injury. This promotes non-reporting of injuries occurring to mail processing clerks and encourages them to seek treatment without employer notification of the clerks' injuries.
- Develop an on-going process to track and trend DBCS musculoskeletal injuries and illnesses.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.

Medical Management

- Develop a medical management program which improves communication and cooperation between the injured workers, medical providers, and management for appropriate identification and treatment of musculoskeletal injuries and illnesses.
- Ensure that medical providers and the supervisor assist the clerk in return to work placement and ensure that a clerk is not placed in a task that may aggravate an

injury. Ensure the supervisors fully understand the MSD risks associated with the tasks and do not violate the work restrictions.

- Analyze the physical demands of the job to determine if the tasks are within the work restrictions.

Maintenance

- Develop a preventive maintenance schedule and specification standard for all equipment and tools. The maintenance schedule will ensure that all equipment and tools are maintained on a regular basis and function properly. These measures will eliminate or reduce forceful exertions and awkward postures by the mail processing clerks and will facilitate full extension of the drawers so the space within the tray is accessible during the transfer from the sorter pocket to the tray.
- Repair all containers and carts so that wheels, brakes, gates and locks operate easily and securely. Ensure that latches and securing mechanisms on all carts are properly maintained. Ensure that the wheels roll smoothly and with the least possible effort. Also ensure that the brakes are easy to engage and hold firmly during loading tasks,
- Provide a method for workers to identify equipment that is not functioning properly and remove such items from service. Create a feedback mechanism to ensure that the equipment has been fixed and is fit for duty and is reported to the clerk.
- Provide an individual identification method for recording and tracking maintenance on each piece of equipment such as containers, carts and racks.

Training

- Provide ergonomics training by a knowledgeable instructor to <u>all</u> workers including temporary and casuals on an annual basis so they can effectively participate in the ergonomics effort. This training includes recognition of workplace MSD risk factors, signs and symptoms of MSDs, job analysis methods, skills in problem solving and best practices to perform the tasks. More advanced training should be provided to key individuals, on regular intervals, by a person who is competent in ergonomic principles and how these principles relate to the DBCS machines.
- Provide all supervisors, including all 204B temporary supervisors, training in work related ergonomic injury assessment and reporting procedures. This will ensure that the OSHA records accurately represent the injuries that occur at the DBCS or any other machine used by the clerks.
- Provide job specific ergonomics best practices training to all workers on an annual basis or when workers are placed in a new task. Ensure that the training is specific to the risk factors of the job tasks.
- Provide training to all clerks, supervisors, safety staff and medical staff on how to perform an injury assessment, determine work relatedness, and how to develop possible control options to eliminate or reduce the potential hazards associated with the tasks for the mail clerk.

- Update the *Power Lift* training video to more accurately depict the best body mechanics for the feeder and sweeping tasks.

In-Plant Support

- Discuss changes in the sort plan with the clerks familiar with the task prior to reorganizing the sort plan.
- Modify sort plans (especially primary sort) to minimize use of the bottom and top stacker bins.
- Assess all Tour 3 and Tour 1 sort plans and where possible consolidate bulky, heavy, or high volume mail to the middle tiers during the primary sort.
- Change the positions of miss-sorts so they do not accumulate at the pocket at the far end of the sorting machine.

In addition, the enclosed Ergonomic Evaluation of the Delivery Bar Code Sorter provides the USPS Headquarters details on all the issues found at the nine inspected sites and offers possible control options to eliminate or reduce ergonomic risk factors. This report may be a beneficial reference for identifying the issues and developing control strategies present at this P&DC.

You may voluntarily provide this Area Office with progress reports on your efforts to address these conditions. Under OSHA's current inspection protocol, we may return to your work site in approximately one year to further examine the conditions noted above.

If you have any questions, please feel free to call me at (708) 891-3800.

Sincerely,

9/14/00

Gary Anderson
Area Director
Calumet City Area Office

Enclosure