



USAID
FROM THE AMERICAN PEOPLE



Business Plus Initiative
USAID funded project implemented by Chemonics International

Time Release Study

March 2013
Ulaanbaatar, Mongolia

Project: Mongolia Business Plus Initiative Project (BPI)
Report Title: ***Time Release Study***
Main Author: Paul Clark
Contract No. 438-C-11-00001
Submitted by: BPI Project/Chemonics International Inc., Express Tower, 12th Floor,
Chingeltei District, Ulaanbaatar, Mongolia
Telephone and fax: (976-11) 32 13 75 Fax: (976-11) 32 78 25
Contact: Efrain Laureano, Chief of Party
E-mail address: elaureano@bpi-chemonics.biz

ABBREVIATIONS AND ACRONYMS

USAID	United States Agency for International Development
Analytical Team	Group of Customs Department staff assembled to analyze Time Release Study data
BPI	The Business Plus Initiative project
CAIS	Customs Automated Information System
Data Contributors	Customs staff, GASI staff and others that completed one part of a data collection form
Enumerators	Individuals that collected data on individual shipments on a full-time (but short-term) basis; this includes Customs staff dedicated to the TRS and short-term hires dedicated to the TRS
GASI	General Agency for Specialized Inspection
IFC	International Finance Corporation
TRS	The specific Time Release Study used in Mongolia that is the subject of this Report
TRS Databases	Individual databases with results for each location
TRS-type	Generic Time Release Studies as described by the World Customs Organization
VBA	Visual Basic for Applications
WCO	World Customs Organization

TABLE OF CONTENT

ABBREVIATIONS AND ACRONYMS.....	i
TABLE OF CONTENT	i
EXECUTIVE SUMMARY	i
SECTION I: OBSERVATIONS AND POLICY RECOMMENDATIONS.....	3
OBSERVATIONS.....	3
RECOMMENDATIONS.....	4
SECTION II: METHODOLOGY	9
GENERAL APPROACH.....	9
LOCATIONS AND PROCESSES.....	13
FIELDWORK PROCESS	16
DATA ENTRY AND CLEANING.....	16
ANALYSIS	17
SECTION III: RESULTS	21
ULAANBAATAR CUSTOMS TERMINALS	21
ZAMYN UUD BORDER CROSSING	22
ALTANBULAG BORDER CROSSING	23
CHOIR	23
OVERALL PERFORMANCE.....	23

EXECUTIVE SUMMARY

The Business Plus Initiative (BPI) Project and Mongolian Customs General Authority undertook a comprehensive Time Release Study (TRS) in September through December 2012. The study covered Customs Clearance and Technical Control in the context of the International Finance Corporation (IFC)-World Bank Ease of Doing Business ranking. This Report summarizes the work that was done and the results.

The methods used for the TRS were consistent with international standards for studies of this type. They are also reproducible and repeatable. As a result, the estimates of elapsed time for Customs Clearance and Technical Control shown in this Report are highly credible and provide a sound baseline for comparison with future TRS's.

Elapsed Times for Customs Clearance and Technical Control for imports are shown in the following chart. Mongolia can report an elapsed time for imports of less than 24 hours in the next Ease of Doing Business report.

1. Weighted Average Elapsed Time For Customs Clearance And Technical Control

CODE	LOCATION	NUMBER OF SHIPMENTS	ELAPSED TIME (a)		
			25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
MN	Three Locations	983	00 -- 11:56	00 -- 23:42	01 -- 20:09

(a) Formatted as dd -- hh:mm.

Note: From 06 - Moment Of Truck Registration to 57 - Moment Of Declaration Printed And Stamped\ Form 2 Stamped. Three locations are Ulaanbaatar, Zamyn Uud and Altanbulag.

This is a good result and Customs should be commended. Especially considering that that customs terminals are closed for about 12 hours a day, the under-24 hour result is even more impressive.

Even though the results are good, there are opportunities for improvement. These opportunities are detailed in the body of this report. In summary, about 75 percent of the elapsed time is actually waiting time; only about 25 percent of elapsed time is spent actually performing tasks. There are opportunities to reduce waiting time and improve performance further, for example: implementing advance clearance of shipments.

Another priority area is non-Customs and Technical Control times. Of particular importance is Inland Transportation and Handling, which currently takes 13 days according to the Ease of Doing Business ranking. Reducing Inland Transportation and Handling by just one day (an eight percent reduction) would be much easier than reducing Customs Clearance and Technical Control by the same one day (a 75 percent-plus reduction).

There were few exports during the data collection period: 14 in two locations. Based on this data, the 50th percentile elapsed time for export clearance was less than 24 hours.

The TRS databases contain a great deal of information that can be used to support new performance improvement efforts. There are about 20 combinations of location and process. The TRS database for each process in each covered location is a good starting point for further analysis. Improvements can be identified location by location and process by process. In addition, comparisons between locations can identify best practices. The TRS was largely a data collection and validation matter; much additional analysis could be done to fully exploit the TRS databases.

This Report has three chapters in addition to this Executive Summary. The next chapter discusses a number of observations and policy recommendations that derive from the TRS. The following chapter summarizes the methodology used by the TRS. This is included so that the reader can readily see why the TRS results are very credible. The final chapter shows a number of high-level results (*i.e.*, elapsed times for different processes).

SECTION I: OBSERVATIONS AND POLICY RECOMMENDATIONS

This chapter briefly discusses a number of observations we made during our work and policy changes that the Government of Mongolia should consider. The recommendations are a combination of high-level results from the TRS, general conversations and observations the Consultant experienced during his seven weeks in Mongolia, and changes implemented in Georgia since 2003 (as an example) and their positive and negative results.

It should be noted that the TRS focused on *how long* it takes to clear import and export shipments. The TRS did not focus on *why* it takes a given amount of time. That is, the TRS did not look at the import and export clearance processes step-by-step to identify those specific steps that could be improved, reordered or eliminated. However, further analysis of the TRS databases at a detail level can be done to do this type of step-by-step analysis.

OBSERVATIONS

This section summarizes observations we made during our work.

Current Customs and Technical Control Processing Time is Good and Probably Improving

Shipment processing time is the elapsed time between a shipment arriving at a customs terminal and the (now cleared) shipment being cleared and ready to leave the customs terminal.

In Ulaanbaatar the 50th percentile elapsed time for import shipment clearance is about 31 hours; in Zamyn Uud it is about 21 hours and at Altanbulag it is less than 7 hours.^{1,2} While these times can be shortened further, they are not excessive, particularly considering that they include time when Customs is closed (about 12 hours a day).³

However, as noted later these times do not include time outside Customs and Technical Control, particularly rail time to transport shipments to Ulaanbaatar. Although not assessed by the TRS, we were told that shipment time is usually longer than clearance time. Inland Transportation and Handling is shown as 13 days in the Ease of Doing Business report.

The Customs Department Uses Standard Methods at All Locations and has Well Integrated the CAIS System

The TRS included import and export operations at eight locations. We found that with few exceptions, nearly the same import and export processing methods are used at all locations and that the Customs Automated Information System (CAIS) is well integrated into the standard process. The only exceptions to the standard processes were slight re-ordering of steps (*e.g.*,

¹ The 50th percentile is an elapsed time where 50 percent of shipments take less than the 50th percentile elapsed time and 50 percent of shipments take longer than the 50th percentile elapsed time. Generally speaking, the 50th percentile time is a better measure of performance than is the simple average since the simple average can be distorted by outliers such as shipments that take a very long time to clear due to matters not directly connected to the clearance process (*e.g.*, suspected contamination). The use of the 50th percentile is discussed in later Chapters.

² The 2013 Ease Of Doing Business reports Customs and Technical Control at 4 days. The better data from the TRS now permits this to be reported as either one or two days.

³ Reported processing times are always from the start of the process to the end of the process without considering hours when a customs terminal may be closed. For example, if a shipment required three hours of processing but the first hour was at the end of day one and the second and third hours were at the start of day two then the overall processing time would be about 15 hours (*i.e.*, three hours processing plus 12 hours the customs terminal is closed).

log import at Altanbulog) and unique steps that are needed for unique products (*e.g.*, mineral testing for export at Choir).

The use of standard methods has likely greatly simplified the management of import and export clearances at remote locations and will also greatly facilitate making improvements (*i.e.*, everyone starts from the same position). Standard methods also greatly facilitate the exchange of staff from location to location when needed as a common language spoken by all Customs staff.

Nevertheless, there are some remaining difficulties, primarily due to poor electronic communications with some remote sites that make real-time use of CAIS very problematic. These problems have not yet been fully resolved though we understand that there are improvement steps being taken.

The Customs Department is Well Positioned to Repeat TRS's

Improvements in import and export clearances will become evident in future TRS's as the Customs Department is well prepared. The methods used for the TRS are well documented, though they should be updated by Customs to reflect how work was actually performed (*i.e.*, as-performed procedures).

The TRS was done in a very short period, and the Customs Department should be complemented on that accomplishment. The Customs Department provided staff and aggressively managed processes so that data collection and data entry was completed at an accelerated pace with very good data quality.

However, although the TRS was well performed, it suffered from too-rapid planning. If one was to add up the total time invested in the TRS, including Customs staff and others, the entire effort was between five and ten man-years of work (3 weeks X 85 people in all locations equals five man-years). By any measure, this is a very large effort and it warrants very detailed planning before work begins.

BPI and Customs did some of this planning before data collection began, but significant additional planning by BPI and Customs together would have greatly simplified the overall process. For instance, several locations have very low volumes of imports (in the range of 20 or fewer shipments per ten-hour day); in these locations it would have been easier to just do observations of individual shipments rather than the more elaborate survey schemes that were used.

To the end, processes were in place to ensure that data that was collected quickly and properly.

RECOMMENDATIONS

This Section contains a number of policy recommendations that should be considered. In addition, recommendations for future TRS's are shown.

Steps should be Taken to Significantly Reduce Waiting Time Between Processing Steps

As discussed in later chapters, the 50th percentile time for Customs Clearance and Technical Control at four terminals in Ulaanbaatar is about 1 day 5 hours (29 hours). Approximately 25 percent of this time (7,5 hours) is spent in direct work by Customs and other participants in the import clearance process (*e.g.*, owners). The remaining 21,5 hours is waiting time between periods of direct work and time when Customs is closed (2000 to 0800 each day).

Anything that can be done to reduce or eliminate the waiting time will cause import clearance time to be reduced by an equal amount. Generally it is much easier to reduce waiting time by

five hours (a 25 percent reduction) than it would be to reduce time spent on direct work by five hours (a 67 percent reduction).

The prevalence of waiting time in overall processing time in Ulaanbaatar is true at all locations and terminals.

If Customs and others take aggressive steps to reduce waiting time then import shipment clearance would likely fall to 20 or so hours.

This recommendation concerns imports specifically, but the concept of reducing waiting time equally applies to exports.

Wherever Possible, Processes should be Put in Place to Clear Shipments Before Actual Arrival at the Customs Terminal

It should be noted that usually only three types of direct work require physical access to a shipment: physical inspection by Customs or General Agency for Specialized Inspection (GASI) and taking a sample for testing. This suggests that most other import clearance steps could be done without having physical access to the shipment.

A common practice in other countries, including Georgia, is the use of pre-clearances. In this situation as many clearance steps as possible are performed before the shipment actually arrives. That is, steps that do not require physical access to the shipment are completed before arrival of the shipment.

Pre-clearance is particularly appropriate for shipments that would likely be classified as Green anyway since no physical access at all is required for such shipments. Nevertheless, it is also appropriate for shipments that are classified as Red or Yellow since those shipments also have significant waiting time that could be eliminated.

Significant incentives may need to be put in place to ensure that importers and exporters use pre-clearance whenever possible. Even with incentives, pre-clearance may not be possible for many imports at Zamyn Uud because transport across the border is very ad hoc, with drivers having no advance information on what will be imported on their vehicle.

Of course there are shipments where pre-clearance would be problematic. Those shipments should be handled as exceptions to the general procedure of pre-clearance.

Implementing this recommendation would likely reduce the 50th percentile import clearance elapsed time by half for those shipments where pre-clearance is feasible.

CAIS Should Continue to be Refined

We observed that the CAIS system is used to very good effect by Customs and others involved in shipment clearance. In many ways, CAIS has permitted Customs to achieve good performance improvements in the past.

Nevertheless, we were told that there still are areas where CAIS needs to be further implemented or tailored to the situation in Mongolia. Addressing these situations should be aggressively continued.

Inland Transportation and Handling should be Streamlined

Inland Transportation and Handling is included in the Ease of Doing Business rankings. In the most recent report, Mongolia has 13 days for Inland Transportation and Handling compared to four days for Customs Clearance and Technical Control (in the same ranking). Inland

transportation includes rail transport to a main rail terminal, rail car handling in the terminal and later transport to a customs terminal or the final customer.

Most import and export shipments are transported by rail, either before customs clearance or after customs clearance. This transport time is not included in the elapsed times measured by the TRS. Rather, the TRS elapsed time measurement started when a shipment arrived at a customs terminal and ended when the shipment was ready to leave the customs terminal.

We observed and the Ease of Doing Business report confirms that often the time from entering Mongolia to arriving at the customs terminal (*i.e.*, inbound to customs terminal train transport time) and the time from leaving the customs terminal to delivery to the final customer (*i.e.*, outbound from customs terminal train transport time) is quite long.

To that end, priority should be given to non-Customs and Technical Control times. Reducing Inland Transportation and Handling by one day (an eight percent reduction) is much easier than reducing Customs Clearance and Technical Control by the same one day (a 75 percent reduction).

Identifying specific ways to streamline rail operations was not within the scope of the TRS. Nevertheless, we observe that there appear to be large opportunities for improvement. For example, train makeup at the Ulaanbaatar station is entirely paper based.

Streamlining rail operations would likely reduce total time from entry into Mongolia and delivery to final consignee by three or more days. However, we did not analyze this situation in detail so this is only a rough estimate.

The Number of Customs Terminals should be Optimized

There are economies of scale for customs terminals, for both Customs and the final customer. In Ulaanbaatar there are 14 customs terminals. They range in volume from large to very small (measured in a few shipments per day). The larger terminals are generally well laid out, but are congested from time to time. Rationalizing the customs terminals would likely reduce processing time and costs.

However, the customs terminals are private businesses so the ability of Customs to influence customs terminal operations is somewhat limited. The choice of terminal is usually made by the owner or customs broker. The TRS covered only four of the 14 terminals, but even among these four terminals the range of 50th percentile elapsed time for import Customs Clearance and Technical Control ranged from 26 hours to 30 hours. Clearance times in smaller terminals may well be longer since they usually do not have customs brokers and banks, although they do have Customs staff available. More analysis should be done to clarify if the range of processing time stems from differences in types of shipments or from other terminal-specific matters.

The TRS should be Repeated in Two Years

Ideally, Customs would have very current performance data all the time. This is not realistic as doing TRS work on a continuous basis is not realistic. However, the entire TRS should be repeated periodically to assess overall progress and to prove-out the impact of procedural changes.

To this end, Customs should repeat the TRS in late 2014, at the same time of year as the TRS. As noted previously, the number of locations can be reduced due to low volumes at certain locations.

The Locations and Processes to be Included in Subsequent TRS's should be Prioritized

A guiding principle for the TRS was that all locations and processes needed to be included. To that end, this was an unwise choice since the number of shipments in some remote locations were too small to greatly influence results. Of 58 combinations of location and process only about 20 could be considered large enough to affect overall results.⁴ In addition, the number of shipments in such locations were small enough to warrant entirely different and simpler data collection methods.

An unfortunate consequence of this was that time was invested in such minor locations rather than focusing more strongly on the most important locations. In fact, materials were prepared for some locations where there were zero shipments during the survey period (*i.e.*, some log terminal in Altanbulag).

Before the next TRS is undertaken more thought should be given to what locations and processes to include.

TRS Results should be Made Available on a Customs-Managed Website

The TRS generated a large quantity of data and summary reports. This report includes only a few percent of the informational content of the TRS databases. The detailed data and information would be useful to Customs (from senior to middle management) and a number of other stakeholders.

The nature of the data and information available lends itself to inclusion on a simple TRS website. This website would need two webpages. The first webpage would permit the user to select location, process and steps within the process; that is, select the data to show. The second webpage would merely serve the requested information.

Permanent Analytical Support should be Given to Managers at Each Location

There are one or more TRS databases for each location. These include significant information that can be extracted for individual locations. For example, for some processes there are more than 800 combinations of start and finish moments. These can be used to identify the processing steps or, more importantly, the waiting times that are most problematic.

Reports exist for all these combinations, but analyzing them to determine the most problematic areas is not a small task; it is not something that a manager could normally do as a routine matter. As a result, permanent analytical support needs to be provided to managers at each location.

The Analytical Team(s) should Identify Best Practices

The TRS focused on providing the data needed to improve processes; it did not focus on identifying best practices beyond identifying locations where processing time is less than at other locations. The TRS databases show how long processes take, but they do not contain information on why one location performs better than another.

As a result, detailed results for individual locations should be compared and the underlying processes that give rise to those results identified. In this manner, Customs can identify and expand use of best practices.

⁴ The results from the small locations are as credible as those from larger locations. Nevertheless, ten shipments in a small location would not affect overall results when there are more than 1 500 shipments in larger locations.

SECTION II: METHODOLOGY

This Chapter describes the methodology used for the TRS. The methods used for the TRS were consistent with international standards for studies of this type. They are also reproducible and repeatable.

The technology for TRS-type studies is well developed. All are based on surveys of actual shipments as they move through the import or export process.⁵ The World Customs Organization (WCO) has standard survey forms for TRS-type studies. These were used as the base for the survey forms used for the TRS, although TRS survey forms greatly extended the standard. Data collection and field management processes for the TRS followed well established survey standards. They were designed to ensure high quality data, with checks of accuracy. Double-data entry was used to ensure a clean database for analysis; discrepancies were resolved by the field. Analysis was done with a variety of tools provided to the Analytical Team.

The TRS is reproducible since the methods used for the TRS meet generally accepted standards for TRS-type studies. This means that if the TRS was duplicated (an infeasible thing, but important as a concept) then the results would be the same.

Finally, the TRS is repeatable in the sense that it can (and should) be repeated in the future. Results from the current TRS can be compared to the results from future TRS's to determine improvements. Typically, changes would reflect faster clearance times. The only caveat on repeating the TRS is that future TRS's should be done at the same time of year as the TRS. There is good meta data available to facilitate repeating the TRS.

This chapter describes the TRS methodology with international standards, reproducibility and repeatability in mind. There are five sections. The first section describes the general approach that is taken by TRS-type studies. The next section shows the 58 combinations of location and process that were part of the TRS. The third and fourth sections summarize how fieldwork was managed and how data was entered and cleaned. The final section discusses how analysis was done. Summary results from the analysis are shown in the next chapter.

GENERAL APPROACH

This section describes the general approach taken for the TRS. There are three sub-sections. The first sub-Section discusses the overall concept of the TRS. The next sub-section describes the overall management of the TRS. The data collection methods used for each location is discussed in the third sub-section

Concept

The concept behind the TRS is to accurately measure the elapsed time for Customs Clearance and Technical Control. The following chart shows Customs Clearance and Technical Control for a single shipment. Moment A is when the shipment arrives at a customs terminal.⁶ Moment C is when the now cleared shipment leaves the customs terminal.

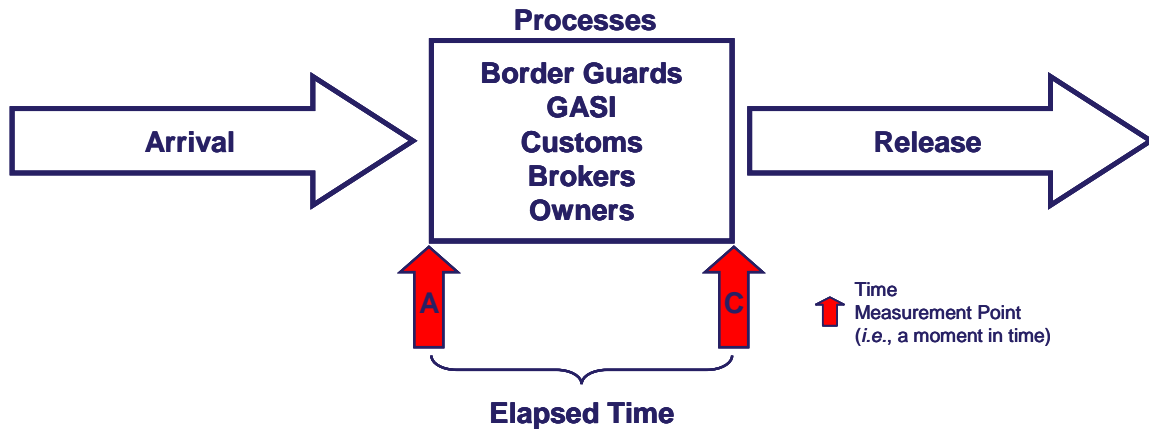
The TRS includes data collection processes to record the date and time at moments A and C for each shipment. The difference between moments A and B is the elapsed time for Customs Clearance and Technical Control for each shipment. The elapsed times for all shipments of one

⁵ The TRS was actually a census of shipments during the data collection period. That is, data was collected on *all* shipments rather than on a *sample* of shipments. As a result there is no sampling bias in the results other than the time of year of the TRS.

⁶ The terms moment A and Time Measurement Point A can be used interchangeably.

type (e.g., all shipments, shipments of commodity type X, shipments of risk classification Green) are then analyzed as a group and summary statistics for elapsed time are calculated.

2. High-Level Customs Clearance and Technical Control Schematic



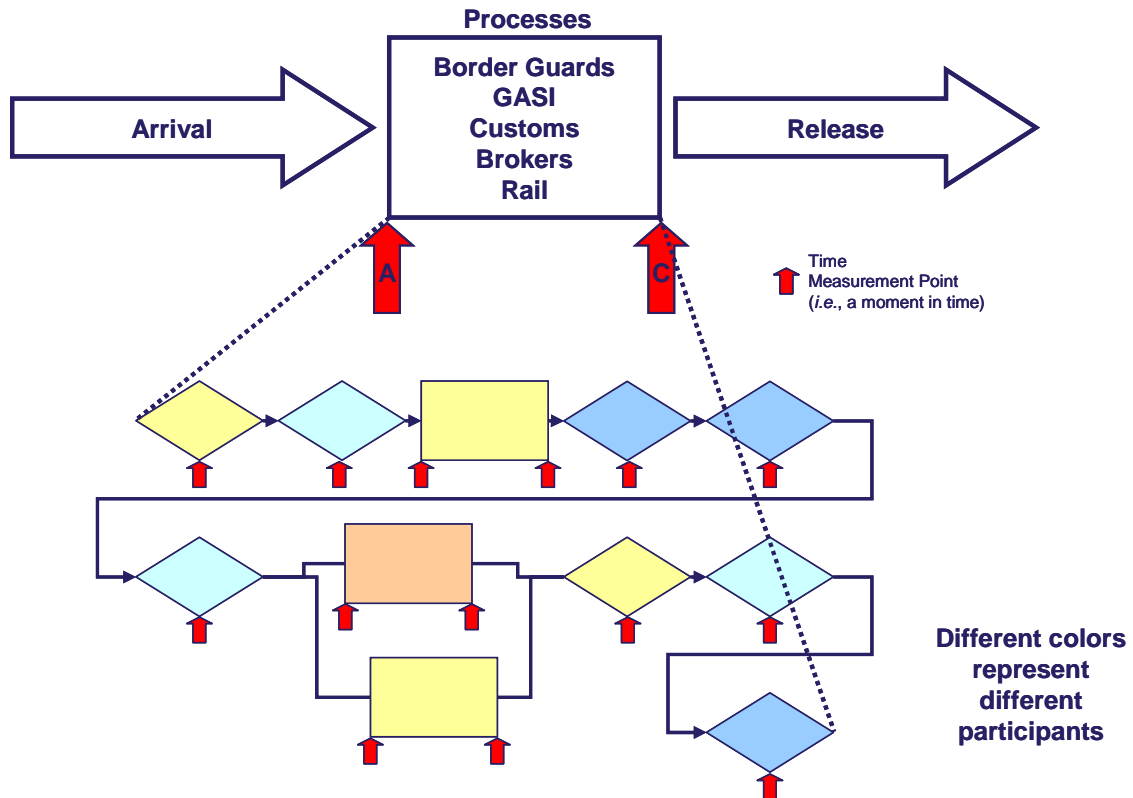
Between moments A and C a number of sub-processes (e.g., register the shipment, perform physical inspection) are used by a number of participants (e.g., GASI, Customs). The elapsed time between moments A and C is the sum of the time required by each of those sub-processes plus waiting time between processes. Typically waiting time between sub-processes is more than two times the total time spent actually performing work on the shipment. Consequently, focusing on reducing waiting time is very important.

The sub-processes are shown in the following chart. In fact, the sub-processes are of two types: *genuine sub-processes* with different start and finish moments, discrete elapsed times and shown as rectangles and *events* with a single moment, zero elapsed times and shown as diamonds. An example of an event with zero elapsed time would be the submission of documents to Customs to start the clearance process.

During the TRS the time at each moment (or Time Measurement Point, shown by the red arrows) was measured by observation or survey methods and the differences between all combinations of two moments were calculated for each shipment. Shipments were then grouped by type and summary statistics for elapsed times were calculated.

If the different sub-processes are performed by different participants, shown with different colors in the chart, then the total time for each participant (one color of box) within the overall process can be determined and again summary statistics calculated.

3. Detail-Level Customs Clearance and Technical Control Schematic

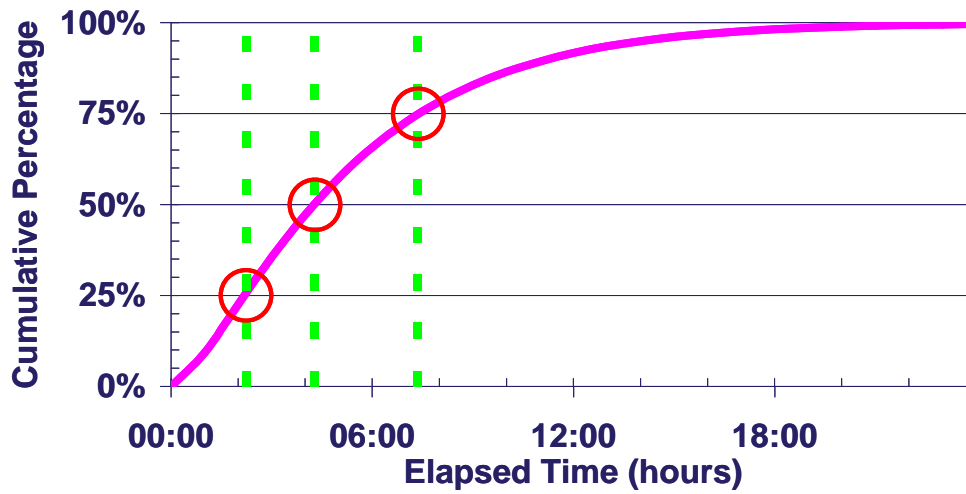


The term “summary statistics” was used to describe the results for all shipments of a particular type. The choice of which summary statistic to use is important. A simple average is easy to calculate but can be misleading. For example, if 95 simple shipments take 3,0 hours each and five simple shipment takes 96 hours each due to concerns about contamination then the simple average is 7,7 hours. In this case the simple average does not really reflect the experience of the average shipment.

Better summary statistics are percentile ranks as shown on the following chart. Three points (circles) are shown. The leftmost circle shows that 25 percent of shipments took less than 2 hours 14 minutes. The middle circle shows that 50 percent of shipments took less than 4 hours 16 minutes. The right circle shows that 75 percent of shipments took less than 7 hours 21 minutes. The chart also shows that some shipments took 18 hours or more. These percentile rank elapsed times are easily explained: “half of consignees were happy because they spent less than 4 hours 15 minutes waiting for their shipment”.

The 50th percentile rank is the best single statistic for elapsed time. Simply put, half of shipments took less than the elapsed time at the 50th percentile and half took more.

4. Depiction Of Percentile Ranks



Overall TRS Management

BPI and Customs shared overall management of the TRS. BPI designed the data collection instruments (*i.e.*, survey forms) and general and line-by-line instructions for all 58 combinations of location and process. Customs vetted the data collection instruments and instructions so that they matched the actual processes used at each location.

Data was collected by 1) dedicated Enumerators who only performed data collection during the survey period through observations and 2) surveys of regular Customs and GASI staffs who each completed one to a few lines of the survey form that was then passed along to others.

Customs arranged for both the dedicated Enumerators and regular Customs and GASI staffs to do data collection and entry. Regular staffs from Customs and GASI and short-term hires were used. The staffs were given the data collection instruments and instructions and BPI staff trained the staffs in how to perform data collection and entry.

Customs dedicated significant resources to managing the data collection and data entry processes. This included regular quality control checks of the methods being used by the dedicated Enumerators and regular staffs. Methodological corrections were made in the initial three or four day test period before the seven to ten days of actual data collection. Systemic errors, such as those found in some data entry processes, were corrected by redoing the data entry.

Customs and GASI provided staff to do analysis under the guidance of BPI. This comprising first data validation (to find errors in data entry) and then reporting from the data.⁷ BPI prepared this report.

Data Collection Methods

The TRS collected time data on 100 percent of shipments for seven to ten days at each location. Three additional days were used to test processes; the collected data was not used.

⁷ Due to the structured way in which data was collected it was possible to enumerate all reports that could be run from the TRS databases. In survey parlance this would be all the feasible cross-tabs. In total nearly 20 000 pages of reports were generated. Of course, only some of those are of great interest, but analysis in this sense was exhaustive.

Two data collection methods were used. Observation methods were used for shipments moving through border crossings. The date and time was observed by an Enumerator with a data collection form, watch and camera when each vehicle joined the queue to enter the border crossing, when the vehicle entered the border crossing proper and when the vehicle left the border crossing. A few other questions about each shipment were also collected from the driver such as destination and overall satisfaction with the border crossing. Cameras were used for all shipments to record license plates and times vehicles entered and left border crossings.

Survey methods were used for shipments going through the Customs Clearance and Technical Control process, whether at a border crossing or in an inland customs terminal. A survey form was attached to each package of documents (for one shipment) when the shipment began the process. The survey form remained attached to the package of documents as it moved through the process.

Individual questions in the survey form were completed by appropriate regular Customs and GASI staffs. Time data was entered at up to 60 points in the process. The completed survey forms were collected when each shipment was fully cleared.

LOCATIONS AND PROCESSES

The TRS covered 56 combinations of location and process as shown in the following chart. All shipments at all locations were considered. However, there were 18 combinations of location and process that had zero shipments during the data collection period (over seven to ten days); most of these were export shipments. To this end, there were about 20 combinations of location and process that had sufficient shipments to warrant detailed analysis and inclusion in any TRS's that may be undertaken in the future. The following table provides a list of TRS locations and processes.

TRS Locations and Processes

LN	PROCESS CODE	DESCRIPTION (location, process)	SHIPMENTS CONSIDERED	DATA COLLECTION METHOD
115	AL1M	Altanbulag Border Crossing - Import Clearance	66	Survey
116	AL1N1	Altanbulag Border Crossing - Inbound Entry Checkpoint	542	Observation
117	AL1N2	Altanbulag Border Crossing - Inbound Exit Checkpoint	531	Observation
118	AL1O1	Altanbulag Border Crossing - Outbound Entry Checkpoint	539	Observation
119	AL1O2	Altanbulag Border Crossing - Outbound Exit Checkpoint	539	Observation
120	AL2Q1	Sukhbaatar Station Log Trans-Shipment Facility - Log Unloading To Storage		Observation
121	AL2Q2	Sukhbaatar Station Log Trans-Shipment Facility - Log Loading To Train Car		Survey
122	AL3Q1	Vidu Log Trans-Shipment Facility - Log Unloading To Storage	6	Observation
123	AL3Q2	Vidu Log Trans-Shipment Facility - Log Loading To Train Car	2	Survey
124	AL4Q1	Siberia Log Trans-Shipment Facility - Log Unloading To Storage		Observation
125	AL4Q2	Siberia Log Trans-Shipment Facility - Log Loading To Train Car		Survey
126	AL5Q1	Oinnars Log Trans-Shipment Facility - Log Unloading To Storage		Observation
127	AL5Q2	Oinnars Log Trans-Shipment Facility - Log Loading To Train Car		Survey
128	AL6Q1	Abtema Log Trans-Shipment Facility - Log Unloading To Storage		Observation
129	AL6Q2	Abtema Log Trans-Shipment Facility - Log Loading To Train Car		Survey
130	AL7Q1	Station Log Trans-Shipment Facility - Log Unloading To Storage		Observation
131	AL7Q2	Station Log Trans-Shipment Facility - Log Loading To Train Car		Survey
132	AL8Q1	Khaliun Uul - Log Unloading To Storage	7	Observation
133	AL8Q2	Khaliun Uul - Log Loading To Train Car	2	Survey
134	BA1X1	Bayankhoshuu Border Crossing - Inbound Entry Checkpoint	75	Observation
135	BA1X2	Bayankhoshuu Border Crossing - Inbound Exit Checkpoint	88	Observation
136	BA1Y1	Bayankhoshuu Border Crossing - Outbound Entry Checkpoint		Observation
137	BA1Y2	Bayankhoshuu Border Crossing - Outbound Exit Checkpoint		Observation
138	BA1Z	Bayankhoshuu Border Crossing - Import Clearance		Survey
139	CH1P	Choir Customs Branch - Export Clearance	9	Survey
140	CH1R	Choir Customs Branch - Import Clearance	7	Survey
141	GS1U1	Gashuun Sukhait Border Crossing - Inbound Entry Checkpoint	76	Observation
142	GS1U2	Gashuun Sukhait Border Crossing - Inbound Exit Checkpoint	62	Observation

TRS Locations and Processes

LN	PROCESS CODE	DESCRIPTION (location, process)	SHIPMENTS CONSIDERED	DATA COLLECTION METHOD
143	GS1V1	Gashuun Sukhait Border Crossing - Outbound Entry Checkpoint	2 738	Observation
144	GS1V2	Gashuun Sukhait Border Crossing - Outbound Exit Checkpoint		Observation
145	GS1W	Gashuun Sukhait Border Crossing - Import Clearance	28	Survey
146	SU1S	Sukhbaatar Inbound Rail - Outbound Train Clearance	13	Survey
147	SU1T	Sukhbaatar Inbound Rail - Inbound Train Clearance	12	Survey
148	TS1AA1	Tsagaannuur Border Crossing - Inbound Entry Checkpoint	18	Observation
149	TS1AA2	Tsagaannuur Border Crossing - Inbound Exit Checkpoint	14	Observation
150	TS1BB1	Tsagaannuur Border Crossing - Outbound Entry Checkpoint	14	Observation
151	TS1BB2	Tsagaannuur Border Crossing - Outbound Exit Checkpoint	14	Observation
152	TS1CC	Tsagaannuur Border Crossing - Import Clearance	15	Survey
153	UB1B	Central Customs Office - Export Clearance	7	Survey
154	UB2A	MongolTrans - Import Clearance	31	Survey
155	UB2D	MongolTrans - Terminal Train Processing	3	Survey
156	UB3A	BLC - Import Clearance	64	Survey
157	UB3D	BLC - Terminal Train Processing	7	Survey
158	UB4A	Abtema - Import Clearance		Survey
159	UB4D	Abtema - Terminal Train Processing	12	Survey
160	UB5A	Material Impex - Import Clearance		Survey
161	UB5D	Material Impex - Terminal Train Processing		Survey
162	ZU1E1	Zamyn Uud Inbound Border Crossing - End Of Inbound Entry Queue	982	Observation
163	ZU1E2	Zamyn Uud Inbound Border Crossing - Inbound Entry Checkpoint	996	Observation
164	ZU1E3	Zamyn Uud Inbound Border Crossing - Inbound Exit Checkpoint	586	Observation
165	ZU1E4	Zamyn Uud Inbound Border Crossing - Inbound Exit Checkpoint	500	Observation
166	ZU1F1	Zamyn Uud Inbound Border Crossing - Import Clearance		Survey
167	ZU1H1	Zamyn Uud Inbound Border Crossing - Outbound Entry Checkpoint	663	Observation
168	ZU1H2	Zamyn Uud Inbound Border Crossing - Outbound Exit Checkpoint	540	Observation
169	ZU2I	Zamyn Uud Train Station 2 - Outbound Train Clearance	46	Survey
170	ZU3J	Trans-Shipments Terminal - Import Clearance	17	Survey

FIELDWORK PROCESS

Each combination of location and process had a customized set of general and line-by-line instructions and data collection forms. These were vetted by Customs staff before the start of testing and data collection. Enumerators and regular Customs and GASI staffs were trained in the use of the instructions and data collection forms.

Fieldwork generally followed the processes shown in the general and line-by-line instructions. Nevertheless, several common problems arose during fieldwork. These common problems and the mitigation strategies used by the TRS are described in this Section.

Several survey forms required collaboration of various organizations at terminals and ports to obtain time-related information. Based on the test period's results, faster ways for effective collaboration and obtaining missing information, particularly from railway station personnel, were proposed and implemented.

In Ulaanbaatar, four terminals out of 14 were covered by the TRS. Testing revealed many unfilled sections of a survey form because goods were cleared at non-TRS terminals. The TRS instructions were amended to reflect such cases.

There were several cases where GASI inspectors assumed that TRS survey forms excluded shipments subject to phytosanitarian inspections. We investigated the case and revealed that despite arrivals of the shipment, owners delayed the clearance processes.

For the operational purpose, Customs changed the setups of many PCs disabling many functions of MS Office of personal computers being used at customs and making impossible data entries for the purpose of TRS. In collaboration with IT department and personnel of customs, the problem was fixed during the test period in Ulaanbaatar and mitigated from reoccurrence at other terminals and ports.

The Gashuun Sukhait port is a current major port for exporting coking coal to China. The TRS could not catch the export through that port because of the current practice of consolidating and clearing all the shipment of coal per day in evening of every day.

It was common at the beginning that customs brokers, some customs inspectors in charge of valuation and inspection as well as GASI inspectors were reluctant to complete fully the detailed survey forms due to their routine daily busy schedules. BPI and members of the TRS team represented by Customs, GASI and the Mongolian Chamber of Commerce & Industry successfully persuaded them and advocated about the importance of their contribution to TRS. The instructions were changed as needed. For example, a customs inspector in charge of valuation were asked to check sections of the survey forms to be filled by customs brokers before reviewing respective customs declarations.

During the test, a special TRS badge was developed and distributed to all Enumerators. The purpose was to distinguish them and facilitate their work, particularly at border ports, where border troops and security guards could easily identify them and allow their pass to restricted areas.

DATA ENTRY AND CLEANING

This Section describes how data was moved from paper forms used by Enumerators and regular Customs and GASI staffs to clean databases. There are two Sub-Sections. The first discusses how data was entered (*i.e.*, double data entry). The second Sub-Section then describes how errors in the two data sets (data entry one and data entry two) were identified and how identified errors were resolved to create final clean databases.

Data Entry Process

Each of the 58 locations and processes had customized data entry forms. The data entry forms were identical to the data collection instruments used (*i.e.*, either the observation forms or the surveys). Two versions of each data entry form were used, one for the first entry of data (data entry one) and one for the second entry of data (data entry two).

Data entry staff were trained in the use of the data entry forms. They were instructed to rigorously enter the data twice, once in the two versions of the each data entry form. Checks were made that data was actually entered twice. It turned out that some shortcuts were taken in data entry, but these were identified in the error identification steps and the affected data were re-entered; in some cases data was entered four times until we were satisfied that the data entry protocols had been correctly followed.

Error Identification and Resolution

The Analytical Team was responsible for identifying errors in the entered data. Automated checks of the TRS databases were done. For each combination of location and process, the two data entry forms (data entry one and data entry two) were compared and errors highlighted. All found errors were returned to the data entry staffs to be resolved against the original documents. If license plates or times were not clear on the original documents then photographs taken by Enumerators were checked to verify license plates or times.

Nearly all survey forms had at least one difference between the two data entry versions. Within a single survey form, about ten percent of questions had differences between the two data entry versions. There were nearly no survey forms with no differences (*i.e.*, without errors) though all errors were caught during error identification.

Although error rates were high, the double data entry and the checks done by the analytical team found and corrected all errors. This cleaning process took approximately two weeks and created very clean final TRS databases.

ANALYSIS

This Section summarizes how analysis was done for the TRS. There are two Sub-Sections. The first Sub-Section describes the tools that were used for analysis; these will be needed for repeated TRS's. The second Sub-Section describes the analysis that was done.

Analytical Tools

A variety of off-the-shelf analytical tools were used for analysis. Customized data entry forms in Microsoft Excel were created for each combination of location and process. Each form contained basic error checking (*e.g.*, that valid times were entered). The error checking was implemented through custom Visual Basic for Applications (VBA) code. The Analytical team was introduced to the basics of the VBA code, but the TRS was not intended to teach programming techniques.

Excel with VBA code was also used to compare the two data entry versions (data entry one and data entry two) and to identify differences. When printed these Excel worksheets provided feedback to the data entry staff on where data entry needed to be checked.

Excel with VBA code was then used to create final clean data sets.

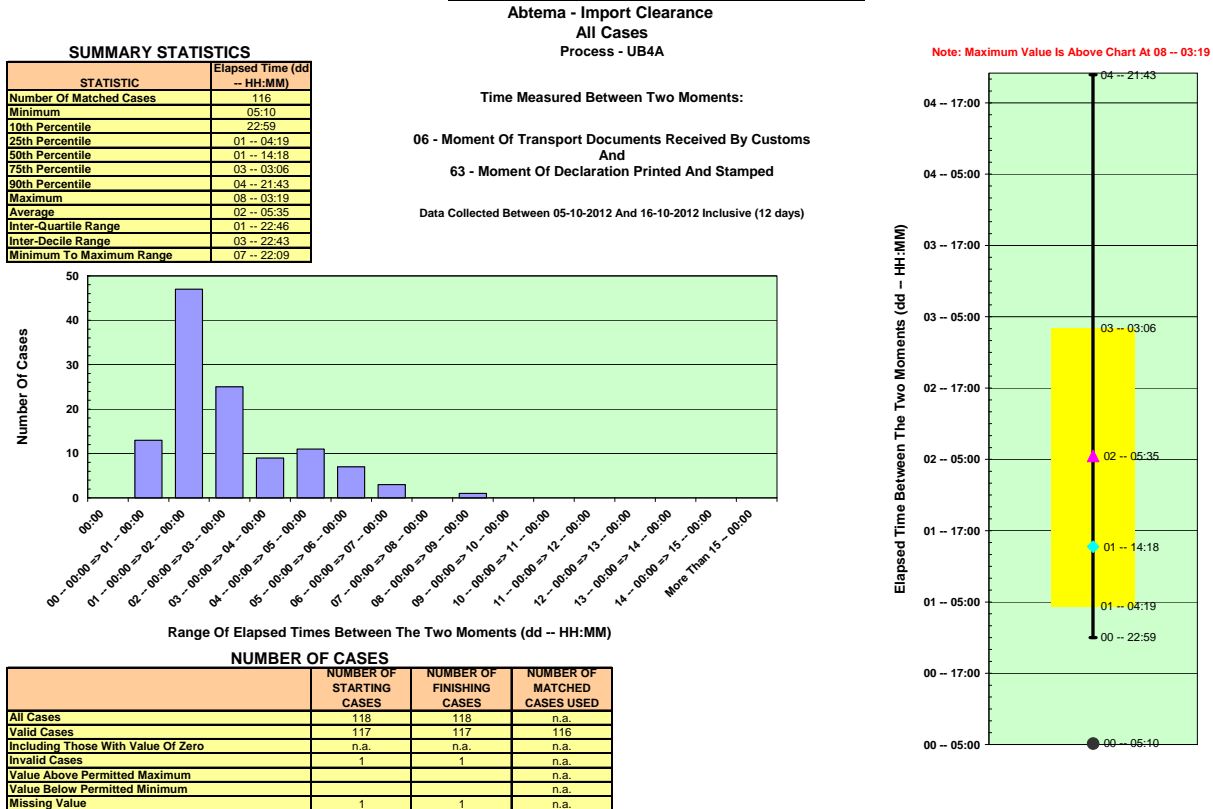
The clean data sets were then uploaded to a shared MySQL database available over the internet. The original data entry forms were used to automatically generate the SQL query needed to create each data table. Navicat for MySQL was then used to do the actual uploading.

Finally, Excel was linked to the MySQL database and then used to generate one standard report for every combination of location, process, starting moment and ending moment. The standard report is described in the next Sub-Section.

Analysis Done

A set of standard reports was run for each combination of location and process and for each combination of starting and finishing moments. Chart 2 above depicts one such process with sub-processes. All combinations of starting moment (any red arrow) and ending moment (any subsequent red arrow) were analyzed and a standard report created.⁸ The following chart shows one such standard report.

5. Example Of Analytical Report



The chart shows results for import clearances at the Abtema customs terminal. The starting moment is when transport documents are received by Customs. This is the start of the Customs Clearance and Technical Control process. The ending moment is when the final approved customs declaration is printed. This is the end of the Customs Clearance and Technical Control process. Data was collected over a 12 day period. Note that any combination of starting and finishing moments can be used.

The table in the upper left shows summary statistics. One hundred sixteen shipments were used to calculate these summary statistics; this is all that were cleared start to finish in the Abtema terminal during the data collection period. One shipment took only 5 hours 10 minutes. One shipment took 8 days 3 hours and 19 minutes. The 50th percentile, the best summary statistic, is 1 day 14 hours and 18 minutes. This means that half of shipments took less than this elapsed time and half of shipments took more. This is the number that would be

⁸ Combining location, process, starting moment and finishing moment created approximately 20 000 pages of reports.

used for the Ease of Doing Business competitiveness report if only the Abtema terminal was considered.

The histogram in the middle of the page shows the distribution of elapsed times. For example, 39 shipments took from 24 to 48 hours to clear.

The box and whiskers chart at the right shows all the summary statistics in graphical form. The minimum and maximum values are shown at the bottom and top of the chart. The 10th and 90th percentiles are shown with the black bar (the whisker). The 25th and 75th percentiles are shown with the yellow box. The 50th percentile is shown with the blue diamond and the simple average is shown with a pink triangle. The rather large difference between the 50th percentile and simple average shows why the simple average is not a good summary statistic.

The table at the lower left shows how the 116 shipments used for the summary statistics were selected. In total there were 118 shipments but two shipments had missing data.

SECTION III: RESULTS

This Chapter summarizes the results of the TRS. There is a truly massive quantity of detailed data in the TRS databases. This data can be used for three purposes. First, overall conclusions can be reached. These are discussed in this Chapter. Second, conclusions about individual locations can be reached and best practices among locations identified and then applied to all locations. Results for individual locations are summarized in this Chapter, but the specific operational methods used at each location that give rise to the results are not discussed.⁹

The Chapter contains five Sections. The first four Sections summarize results for four locations. The final Section summarizes overall results.

ULAANBAATAR CUSTOMS TERMINALS

Imports

For imports, the TRS covered four of the 14 customs terminals in Ulaanbaatar. In each location the elapsed time for Customs Clearance and Technical Control was determined. The overall results for import Customs Clearance and Technical Control in Ulaanbaatar are shown in the following chart. Data collection time was ten to 12 days, depending on the terminal.

6. Ulaanbaatar – Elapsed Time For Import Customs Clearance and Technical Control

CODE	LOCATION	NUMBER OF SHIPMENTS	ELAPSED TIME (a)		
			25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
UB2A	MongolTrans Terminal	27	01 -- 00:32	01 -- 23:22	04 -- 00:27
UB3A	BLC Terminal	63	01 -- 03:46	03 -- 03:39	04 -- 05:14
UB4A	Abtema Terminal	116	01 -- 04:19	01 -- 14:18	03 -- 03:06
UB5A	Material Impex Terminal	124	01 -- 01:23	01 -- 04:37	02 -- 03:12
UBxA	All Four Terminals Together	330	01 -- 03:01	01 -- 07:14	03 -- 04:39

(a) Formated as dd -- hh:mm.

Note: From 06 - Moment Of Transport Documents Received By Customs to 63 - Moment Of Declaration Printed And Stamped.

Among 330 shipments passing through the four Ulaanbaatar customs terminals, the 50th percentile elapsed time is 1 day 7 hours and 14 minutes. This is the elapsed time from the moment a shipment arrives at a terminal (usually by rail) and the moment the final declaration is printed and stamped, and ready for pickup by the customs broker. Depending on the particular shipment, this elapsed time includes one or two nights when no clearance activities occur.

Shipments clear most rapidly at the Material Impex terminal, in 1 day 4 hours 37 minutes. Clearance at the Abtema and MongolTrans terminals are respectively about ten and 20 hours longer. The BLC terminal is appreciably slower than are the other three terminals, about 30 to 48 hours longer. The TRS did not examine the procedural differences among the terminals that might account for the longer elapsed time at the BLC terminal.

One would expect that shipments classified as Green by CAIS would clear more rapidly. This was checked for the Material Impex terminal as shown in the following chart.

⁹ Tracking those individual-location methods was not within the scope of the TRS so we can reach no causative conclusions about why the results are what they are.

7. Material Impex Terminal - Elapsed Time For Import Customs Clearance and Technical Control

CODE	CLASSIFICATION BY CAIS	NUMBER OF SHIPMENTS	ELAPSED TIME (a)		
			25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
UB5A	Green	6	01 -- 01:32	01 -- 02:42	01 -- 04:22
UB5A	Yellow	17	00 -- 04:40	01 -- 02:24	01 -- 04:48
UB5A	Red	101	01 -- 01:46	01 -- 05:56	02 -- 03:13
UB5A	All Classifications Together	124	01 -- 01:23	01 -- 04:37	02 -- 03:12

(a) Formated as dd -- hh:mm.

Note: From 06 - Moment Of Transport Documents Received By Customs to 63 - Moment Of Declaration Printed And Stamped.

Paradoxically, shipments eventually classified as Yellow take a bit less time to clear than do shipments eventually classified as Green. Shipments classified as Green take approximately three hours less to clear than do shipments classified as red, though still more than 26 hours in total. Note that 12 hours of this time is when the Material Impex terminal is closed for the night.

Exports

The TRS covered export clearances at the Central Customs Office but during data collection only seven shipments went all the way through the export clearance process. More shipments started the process but did not complete them during data collection.

The 50th percentile elapsed time for exports from the submission of electronic declarations to the moment the export clearance is stamped is 1 day 2 hours 42 minutes. The 75th percentile is 1 day 14 hours and 9 minutes.

ZAMYN UUD BORDER CROSSING

Imports

Import processes in Zamyn Uud included 1) Customs Clearance and Technical Control of imports and 2) time to move through the border crossing. It should be noted that some clearance activities occur outside the border crossing (e.g., at the scanner). As a result, customs clearance and border crossing times are not directly comparable.

The following chart summarizes elapsed times for Customs Clearance and Technical Control at Zamyn Uud.

8. Zamyn Uud – Elapsed Time For Import Customs Clearance and Technical Control

CODE	LOCATION	NUMBER OF SHIPMENTS	ELAPSED TIME (a)		
			25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
ZU1F1	Zamyn Uud	587	00 -- 04:18	00 -- 21:17	01 -- 04:13

(a) Formated as dd -- hh:mm.

Note: From 06 - Moment Of Truck Registration to 54 - Moment Of Declaration Printed And Stamped\ Form 2 Stamped.

Among 587 shipments over nine days, the 50th percentile elapsed time for Customs Clearance and Technical Control at Zamyn Uud is 21 hours 17 minutes. Note that this usually includes 12 hours when the border crossing is closed. Three-quarters of shipments are cleared in less than 1 day 4 hours 13 minutes.

ALTANBULAG BORDER CROSSING

Imports

Import processes in Altanbulag included 1) Customs Clearance and Technical Control of imports and 2) time to move through the border crossing. It should be noted that some clearance activities occur outside the border crossing (e.g., at log processors); customs clearance and border crossing times are not directly comparable.

The following chart shows the elapsed time for Customs Clearance and Technical Control. The 50th percentile elapsed time is 7 hours 34 minutes. This compares favorably with results from the terminals in Ulaanbaatar and Zamyn Uud.

9. Altanbulag – Elapsed Time For Import Customs Clearance And Technical Control

CODE	LOCATION	NUMBER OF SHIPMENTS	ELAPSED TIME (a)		
			25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
AL1M	Altanbulag	66	00 -- 04:21	00 -- 07:34	00 -- 23:25

(a) Formated as dd -- hh:mm.

Note: From 06 - Moment Of Truck Registration to 57 - Moment Of Declaration Printed And Stamped\ Form 2 Stamped.

CHOIR

Exports

The TRS covered export clearances at Choir. During data collection only five shipments went all the way through the export clearance process. More shipments started the process but did not complete them during data collection.

The 50th percentile elapsed time for exports from the submission of electronic declarations to the moment of physical inspection disposition is 6 hours 36 minutes. The 75th percentile is 9 hours and 10 minutes.

OVERALL PERFORMANCE

The following chart shows the weighted average elapsed time for all three locations (Ulaanbaatar, Zamyn Uud and Altanbulag). This can be used in the next round of reporting for the Ease of Doing Business survey.

10. Three Locations – Elapsed Time For Import Customs Clearance And Technical Control

CODE	LOCATION	NUMBER OF SHIPMENTS	ELAPSED TIME (a)		
			25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
MN	Three Locations	983	00 -- 11:56	00 -- 23:42	01 -- 20:09

(a) Formated as dd -- hh:mm.

Note: From 06 - Moment Of Truck Registration to 57 - Moment Of Declaration Printed And Stamped\ Form 2 Stamped.

The 50th percentile elapsed time for imports for Mongolia is a bit less than 24 hours. Half of shipments take less than 24 hours for Customs Clearance and Technical Control while the other half takes more than 24 hours.

Combining exports from Ulaanbaatar and Choir gives a 50th percentile elapsed time of less than 24 hours.