

# DELINEATION AND DEMARCATION SURVEYS OF THE LAND BORDER IN TIMOR: INDONESIAN PERSPECTIVE

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## ABSTRACT

The establishment of an international border between countries is one of the important elements in the development of peace in the area concerned. Indonesia has both land and maritime boundaries with its neighboring countries. One of the land boundaries is the land border with Timor-Leste. This paper describes the Indonesian experience and perspective in the creation of peace through the technical aspects of border demarcation surveys and its regulation.

Based on the above conceivable understanding both governments of the Republic of Indonesia (RI) and the Democratic Republic of Timor-Leste (RDTL) have conducted the joint delineation and demarcation surveys resulting in around 96% of the total length of the land border lines. Establishment of the international border between Indonesia and Timor-Leste was a joint mandate of the two Governments based on the Treaty 1904 and the Arbitrary Awards 1914. The implementation was fulfilled in the joint activities, which were study of the Treaty, field reconnaissance, building of the common border datum reference frame (CBDRF), and delineation and demarcation surveys.

During the implementation of the joint border demarcation and its regulation there are always dynamic and problematic situations occurred.

## 1. Introduction

Indonesia is an archipelagic state situated geographically in the South-east Asia with its ten immediate neighbors. Therefore, it has international land and maritime boundaries with the ten countries, i.e. Malaysia, Singapore, Vietnam, the Philippines, Palau, Papua New Guinea, Australia, Timor-Leste, India, and Thailand.

Historically Indonesian land boundaries with its neighbors had been delimited during the Dutch colonialization. There are three neighboring countries have land borders with Indonesia, i.e. Malaysia in Borneo (Kalimantan) island, Papua New Guinea (PNG) in New Guinea (Irian) island, and Timor-Leste in Timor island. For each international land border, it has each own bilateral border committee, for instance the most recent one is a Joint Border Committee (JBC) between Indonesia and Timor-Leste which has been established in 2001. In connection to the establishment of the international land border between the two countries, the JBC of Indonesia and Timor-Leste has established seven Technical Sub-Committee (TSC), one of them is the Technical Sub-Committee on Border Demarcation and regulation (TSC-BDR) in 2001. The duties of the TSC-BDR is as follows:

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- To implement the land border between the two countries on the principles and guidelines agreed upon by in JBC;
- To formulate relevant regulation in accordance to border demarcation for further consideration at the JBC;
- To report its activities to the JBC.

In the Indonesian side, the TSC-BDR is led by BAKOSURTANAL.

Having these mandates and duties TSC-BDR of Indonesia and Timor-Leste formulated its program of activities yearly, and is updated regularly at every TSC-BDR meeting.

First program of activity is to carry out reconnaissance survey of the RI-RDTL land border with reference to the 1904 Treaty between the Dutch and Portuguese, and to the Permanent Commission Award 1914 (PCA 1914). This reconnaissance survey was conducted in 2002. The following findings were reported to the JBC:

1. The delimitation lines as described in the 1904 Treaty and the PCA 1914 could not be immediately demarcated in the field due to some technical and socio-cultural problems;
2. Realizing the above problems, the TSC-BDR proposed an additional mandate to carry out a delineation survey as a "bridging" step in implementing the one hundred year old Treaty according to the present condition.

In the 2003 JBC meeting, the above mentioned proposal of the TSC-BDR was discussed and due to its relation to the delimitation process, both sides agreed to bring up this proposal to the 2003 Joint Ministerial Committee Meeting (JMCM). In the 2003 JMCM, under the border issue discussion, it was then agreed by both sides to give instruction to the TSC-BDR for conducting joint delineation survey.

The 2003 TSC-BDR meeting updated TSC-BDR joint activity program by putting priority of carrying out delineation survey. Others, technical elements were then considered to be carried out for supporting delineation survey, i.e. (i) to produce coordinates along the border lines based on an agreed geodetic reference system, (ii) to establish a common border geodetic datum reference frame (CBDRF), and (iii) to prepare and produce a series of border maps along boundary lines for presentation of the land border.

Figure 1 – Overview map of the border



In summary so far, the joint activities of both technical teams of the two countries was started by studying documents, Treaty 1904, followed by data collection and analysis up to the study of geological and geomorphological data along the border areas. This also included sending questionnaire to people and went to the field for reconnaissance surveys. Eventually within the last three years the approximate border lines with more than 900 agreed point coordinates have been achieved, agreed, and stated in the Provisional Agreement signed by the Foreign Ministers Hasan Wirayuda of Indonesia and Ramos Horta of Timor-Leste on the 8th April 2005.

Coordinates and maps representing the border lines are important to support the legal documents, academic studies, development planning, rule of law implementation, etc., but it is not an easy task for local people and for border maintenance in practice. This problem has been anticipated by the Indonesian side through its effort in making public awareness and supplying border information to the people in the border area of RI-RDTL. One of its physical implementation is erecting Border Sign Post (BSP). Erecting the BSP is a unilateral activity in line with the Indonesian border management policies, among others are: (i) territorial integrity, (ii) elevating people prosperity, (iii) combating against trans border crimes and security measures.

## **2. The Joint Reconnaissance Survey**

Upon instructed by the JBC Meeting in Dili, two technical meetings of the TSC-BDR were conducted in Cibinong on 21 February 2001, and in Denpasar on 18 April 2002. There were agreement to conduct the Joint Reconnaissance Survey (JRS) along the land border. The objectives and aims of the JRS were:

- a. to verify the result of preliminary studies executed unilaterally by each party;
- b. to study and identify the river characteristics, including the morphological configuration of the river banks, location of river islands, and the location of river thalweg, and salient points for application of median line principle;
- c. to locate in the field the reference markers related to the 1904 Treaty;
- d. to study the socio-economic uses of the rivers by the local people;
- e. to familiarize one-self with the field conditions and characteristics of the border area and recognize specific problems, which will be met by technical teams when demarcating the border, i.e. to collect field information needed for planning of the real border survey and demarcation work, including its logistic support.

The JRS was supported with maps and materials to be referred to and used for analysis. Those were as follows:

- a. Topographic maps of 1:50,000 scale, compiled in 1966 by the Portuguese. The border line shown on the map completely depicted the border line as defined in the 1904 Treaty. Map details on the Dutch side of the border, now Indonesian side, was deliberately omitted by the Portuguese during the production of the maps;
- b. Topographic border zone maps of scale 1:25,000, with hypothetical border zone of 2.5 km on each side of the border, compiled by Indonesia from topographic map series produced in 1996. The border line shown on the maps depicted the border line as defined in the 1904 Treaty;
- c. 1:50,000 compilation maps produced by GERTIL/East Timor;
- d. Other relevant maps and supporting materials from both sides.

The JRS was carried out from 18 April 2002 to 2 May 2002.

The result of the JRS was reported to the JBC Meeting in Jakarta in 2002, and further to the Bilateral Meeting (Ministry Level) in 2003 and that instead of directly proceed with the joint demarcation survey it was decided to firstly conduct the joint delineation survey due to some technical and non-technical problems faced during the JRS.

### 3. The CBDRF Network

CBDRF is the abbreviation of Common Border Datum Reference Frame for the establishment of the international terrestrial border between the RI and the RDTL. It is formed by a set of geodetic control points used as reference for the subsequent delineation and demarcation surveys of the border.

The CBDRF network has been observed in two different epochs. The major campaign was carried out in May 2003, where reference markers were materialized (in Timor-Leste) and observed in both sides of the border. In addition, sites observed in the Indonesian side in December 2002 were also included in order to densify the entire network.

ITRF2000 (International Terrestrial Reference System, solution 2000) has been selected to map the CBDRF into a known international reference frame. After independently processed by the Indonesian and the East-Timorese partners, and jointly analyzed and corrected, the agreed final coordinates of the CBDRF network were a guarantee of the accurate delineation of the border.

In total there are 69 stations of the CBDRF network, consists of:

- Zero-Order stations (1 in Timor-Leste and 3 in Indonesia)
- 16 First-Order stations (9 in Timor-Leste and 7 in Indonesia)
- 49 Second-Order stations (10 in Timor-Leste and 39 in Indonesia)

Fernandes (*et al.*, 2005) concluded that the results of the processing showed that the stations of the CBDRF, in particular, the Zero- and First-Order stations, have very robust solutions with respect to ITRF2000. In this way, the accurate connection of the points of the border line between Timor-Leste and Indonesia with respect to a global reference frame is possible. Furthermore, the derived solutions can be used in the future for other type of projects (e.g., geodynamic studies or definition of national geodetic networks).

### 4. Joint Delineation Surveys

Delineation means agreement between both parties on a line that constitutes the border in accordance with 1904 Treaty and the 1914 Arbitrary Awards (PCA 1914), and other relevant legal instrument, in with which the land border can be demarcated unequivocally (Technical Guidelines for Delineating the Border between Indonesia and Timor-Leste, 2003). The decision for the Joint Delineation Survey was made during the bilateral Ministerial meeting in 2003.

During the discussion of both technical teams (Indonesia and Timor-Leste) in December 2002 and continued in March 2003, it was summarized that the border line could be delineated according to the following agreed upon criteria as described in the Agreed Technical Specifications and the Standard Operation Procedures:

- by natural boundaries (thalweg later on was decided be altered by median line, and watershed boundaries);
- by coordinates of border points;
- by defining it as a north-south or east-west line of certain longitude or latitude;
- by delineating it on a map;
- by describing verbally its geographical location (non-natural boundaries).

The delineation processes were implemented on both agreed maps and imageries as well as through the joint field surveys.

Border line delineation on maps/imageries was done independently by each team as a preliminary step of which shall meet the accuracy standards and specified technical specifications. The technical meeting then compared and merged the results by deciding on the border line turning points and its provisional coordinates.

Field verification checked the provisional coordinates with respect to terrain features by a joint field team as to its reliability, i.e. by staking out methods using the provisional coordinates and GPS receiver. In the case of significant deviation from existing terrain topography was found, the joint technical team decided on determining new turning points in the field, temporary marking it and determining its provisional coordinates using GPS receivers.

After the field implementation of the border delineation, carried out in 2003, 2004, and 2005, some 907 border point coordinates, of both in the East sector (the main border) and in the West sector (the Oecussie border) were agreed and stated in the Provisional Agreement signed by the two Foreign Minister of Indonesia and Timor-Leste in Dili in 8 April 2005.

## **5. Joint Border Mapping**

As mentioned above that the border line delineation on maps/imageries was done independently by each team as a preliminary step of which shall meet the accuracy standards and specified technical specifications. This preliminary step was in fact also a preparation for the planning maps in which the technical meeting then decided on the border line turning points and its provisional coordinates to be used and executed in the field. Therefore those maps have to be in a proper geometric accuracy as agreed on the technical specifications.

This went further that the point coordinates resulted in the joint delineation surveys in the field were plotted on the so called joint border maps, both in the form of 17 sheets border line maps of 1:25,000 scale and 26 sheets image maps of 1:10,000 scale.

Besides being the media of plotting the point coordinates of the border, these maps were also used as a mean to depict the border lines. These border lines partially fixed and agreed as long as the connection line between two consecutive points was possibly straight and clear, mostly below 150 meters length. Otherwise the border lines were stated as approximate lines when the connection line was more than 150 meters length or the turning points were still have to be further defined accurately in the field.

Another sheet map namely General Map with the scale of 1:125,000 was also used as an overview map covering the whole sectors of the land border and more important is that the map was functioned in the formal agreement on which both Foreign Ministers of Indonesia and Timor-Leste put their signatures. Those mentioned maps were indeed important formal products of the RI-RDTL land border demarcation scheme as it became the Annexes of the Provisional Agreement 2005.

Apart from those mentioned maps, there were still 9 sheets of orthophoto maps at the scale of 1:10,000 covering the west side of the Oecussie border. These maps were produced unilaterally by the Indonesian side but submitted to, evaluated, and accepted by the Timor-Leste side as other means of later depicting the border lines. The methodology of the orthophoto maps was discussed and decided in the TSC-BDR meeting as an alternative way for delineating the concerned border line due to the field situation of the border as a long "unwalkable" segment.

For certain small segments and areas, for example around a border crossing point, maps of the scale 1:1,000 were also produced unilaterally by the Indonesian side and again also being submitted to the Timor-Leste. This type of maps is very useful for further large scale development planning works in the border.

## **6. The Provisional Agreement 2005**

A mile stone of the RI-RDTL land border establishment process was the event of signing the Provisional Agreement (PA) between the Government of RI and the Government of RDTL on the Land Boundary by the two Foreign Ministers consecutively Hassan Wirajuda of Indonesia and José Ramos-Horta of Timor-Leste in Dili, 8 April 2005.

In the PA it was stated in 9 Articles the agreement of both countries regarding with the decision, process, and results of the land border establishment. In short these are as follows:

Both Governments have agreed:

- with the list of border point coordinates (Article 1);
- to carry out further delineation works (Article 2 and 6.a);
- to carry out demarcation works as soon as possible (Article 3);
- to maintain the border markers (Article 4);
- to make a separate arrangement on river management (Article 5);
- to consider the local community affected by the unresolved segments negotiation process (Article 6.b);
- that the PA constitutes the integral part of a Final Agreement (Article 7.a)
- that the use of approximate line is only for practical management purposes (Article 7.b);
- to settle any dispute arising out of the PA (Article 8);
- that the PA shall enter into force 30 days after the date of signature (Article 9).

For the completion the PA was Annexed with (i) the list of point coordinates, (ii) 1 sheet of General Map at 1:125,000 scale, (iii) 17 sheets of Border Maps at 1:25,000 scale, and (iv) 26 sheets of Image Maps at 1:10,000 scale.

## **7. Joint Demarcation Surveys**

Joint demarcation survey is a joint activity to accurately survey and build the border markers along the border lines especially in accordance with the list of the border point coordinates as agreed in the PA 2005. This joint demarcation survey has in fact been long waited by many sides: the local people, the local Government, and the border security forces. It is obvious that the existence of the border markers will give a clear physical appearance of the border line in the field, which means preventing from ambiguity.

The survey was done in August to September 2005, surveying and building 50 border markers. This was initiated with the survey and special construction of two first markers in the border-bridge of Motaain in the North end of the East sector border. These two first markers were then be formalized with the signatures of the two Foreign Ministers of Indonesia and Timor-Leste in the 30<sup>th</sup> August 2005.

Besides the two first markers, there two types of markers, one is the main border marker erected at non-river feature areas, and the other is the reference markers erected in both sides of river banks of which the positions of median points connecting a median line can be identified and calculated. For the time being the erection of the border markers, which was yet only other 48 markers, could not be systematically placed, instead it was placed according to the priority need of the border areas such as close to the border crossing points. Ideally, with around 200 kilometers length of the whole land border it will need around 500-600 border markers, or even more subject to both Government's budget.

Result of the joint demarcation survey has been in the agenda of the TSC-BDR meeting in Surabaya, Indonesia, in 2-4 December 2005, and will be reported to the next JBC meeting.

## **8. Problems Identification**

Problems resulting in some unresolved segments came during and after the joint reconnaissance and delineation surveys. In the technical aspect the problems occurred in the difference of Treaty interpretation implemented in the field. An example was the segment of Mota Malibaca with the extent of 1000 meters between point T203002 to T203003. The problem was described as being a technical difficulties in the identification of the median line in the field due to the existence of many islands. Fortunately this problem could be solved by agreement of following the median line using temporary coordinates with orthorectified Ikonos and considered to be implemented in the next field survey.

Non-technical problem could be in existence such as disagreement between local people on the location of the border line due to the use of land surrounding. An example of non-technical aspect problem was the segment of Noel Ekot extending around 2000 meters from point T112169 to T 112170. The description of the problem was there were paddy fields managed by both local people sides at the river banks. Both locals did not agree to measure the river median. It was eventually solved by following the median line which then had to be socialized because of the use of land in the riverbed.

The problems were partially solved and partially not yet. Out of 8 unresolved segments in the year of 2003 5 (five) segments were solved through discussions in the 2004 technical meetings.

## **9. Recent development**

The aims of development of the border areas are: (i) to maintain the integrity of the country territory, (ii) to promote the local people's prosperity, (iii) to combat the trans border crimes and security measures, and (iv) to promote any possible cooperation for the development.

However, the development should not only be carried out unilaterally but also could be programmed bilaterally. The development of the border crossing point is also an example of a joint development between the two countries. Examples of the joint development between Indonesia and Timor-Leste along the border is the development of border crossing points of Motaain and Motamasin in the East sector and Napan and Haumeniana in the West sector, including the building of border markets.

The most recent development related to the use of land and water has an example as follows. In mid 2006 the local Indonesian Government has to renovate the Mobusa reservoir in Asumanu village, Sub-District of Raihat in the Haekesak border segment, close to the border point coordinates of T505004 (9° 0' 40.065", 125° 5' 19.304"). The Reservoir was built in 1991 when Timor-Leste was the Province of Timor Timur (Indonesia). At present part of the reservoir is in the Timor-Leste territory where the broken occurred most. However, since the reservoir is built for the use of water (and land) for both locals the Timor-Leste Government permit the renovation.

This is another good actual example where the development is conducted for the sake ness of both local people along the border.

### **Border Sign Posts (BSP) erection as part of the development.**

There is no bilateral activity (neither meeting nor joint field survey) between the two countries in 2006 due to the unfortunate political situation in Timor-Leste. Instead, Indonesia unilaterally conducts a survey to erect 95 Border Sign Post (BSP) along the

border line within the various offset of 5 to 300 meters to the border line in Indonesia territory.

The main aim of the BSP is to aid the local people and the security forces in knowing the position of one-self approximately to the location of the border line. Furthermore, the BSP is also useful for socializing to and educating the local people as well as the security personnel to be aware of the existence of the border line and also useful for the purpose of border line maintenance.

The BSP as part of the border area development is erected in the Indonesian territory with the "warning board" faces towards the Indonesian direction. However, in the near future this can be developed by making two back-to-back warning messages, one towards the Indonesian side, and the other towards the Timor-Leste side. The later can have the warning sentence, for example: "Warning! You are entering the Indonesian Territory!". This is certainly used for the good purpose as a prevention for illegal border line trespassing. This unilateral activity is planned to be reported to the next TSC-BDR RI-RDTL meeting.

## 10. Concluding Remarks

Having the perspectives based on the experiences in the joint surveys of reconnaissance, delineation, and demarcation, remarks can be concluded as follows:

- a. Due to the situation and condition of the nature especially the river courses, which are easy to change, the thalweg is jointly decided and applied in the field to be altered with median line. The identification of thalweg as stated in the 1904 Treaty, in the case of RI-RDTL border line, could not be applied in the field. This situation has been reported to and accepted by the higher level.
  - b. The factual experiences obtained in the field shows that when speaking in terms of hundred years back even before the colonial governments came, both local people are originally one in unity so that the separation by the international state border would not stop the "joint" traditional and socio-cultural activities. This will always exist and this has to be treated in a special arrangement.
  - c. In the management of the border development besides the technical maintenance of the border, a "soft border" policy has to be developed as well. In this way it is not implementing the "hard border", instead wisely keeping the traditional rights and customaries of the local community being served and developed along the border area.
  - d. As part of a peace creation along the border area this is an invaluable experiences so that the joint border surveys has to be continued and the RI-RDTL land border has to be consistently completed and developed.
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