

No.

# インドネシア動物医薬品検定計画 巡回指導調査団報告書

昭和61年4月

国際協力事業団

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# インドネシア動物医薬品検定計画 巡回指導調査団報告書

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昭和61年 4 月

国際協力事業団

国際協力事業団	
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## はじめに

国際協力事業団は、昭和61年1月27日から2月7日まで、緒方宗雄氏(国際協力事業団・国際協力専門員)を団長とするインドネシア動物医薬品検定計画の巡回指導チームを派遣した。

インドネシア動物医薬品検定は、昭和59年4月より「イ」国におけるワクチン等(生物学的製剤)を主体とする動物医薬品の検定を実施し、これらの有効性及び安全性を確保することを目的に技術協力が実施されている。

今回派遣された巡回指導チームは、「イ」側で計画している国家検定の実施時期(1986年4月より実施の意向)について技術的観点から検討協議の上助言、指導を行った。また、年度別の専門家派遣、研修生受入れ及び機材供与計画についても協議を行った。

国家検定の開始時期は、当初の計画から早められ、1986/87会計年度にも着手されることとなったが、これは、種々な要因を考慮のうえ、技術的、財政的及び政策的見地にとって協議された結果である。本報告が今後の技術協力の具体的指針として活用されることを願うものである。

おわりに、緒方団長をはじめ、巡回指導調査の任にあたられた団員各位及び現地において協力いただいた関係者各位に対して深甚なる謝意を表す。

昭和61年4月

国際協力事業団

農業開発協力部長 田内 堯





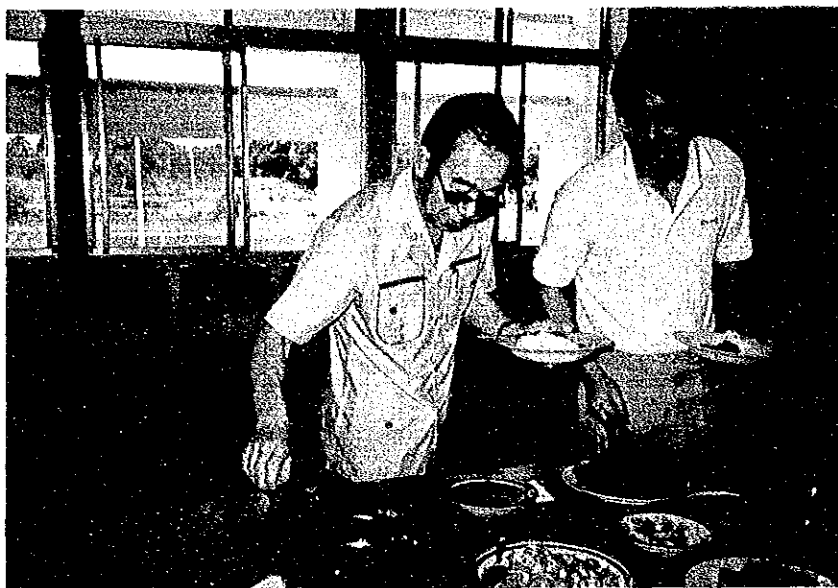
( 専門家用の部屋 )



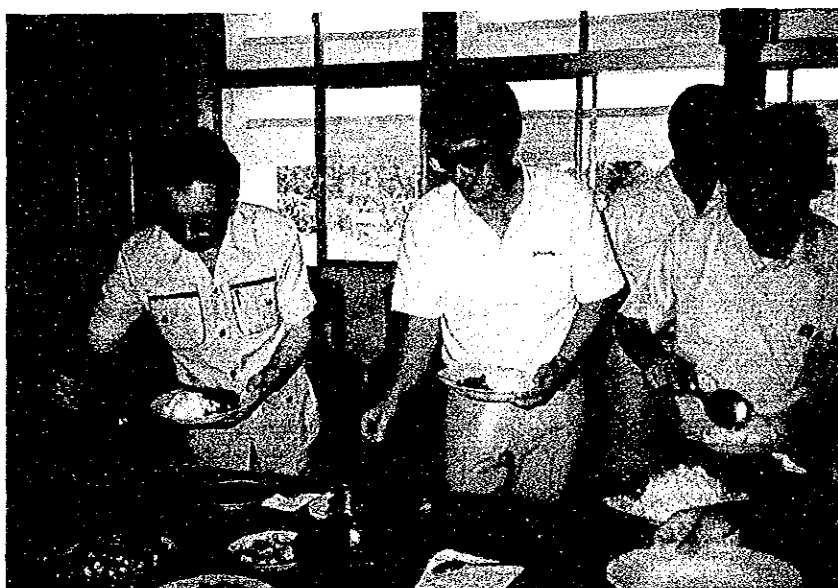
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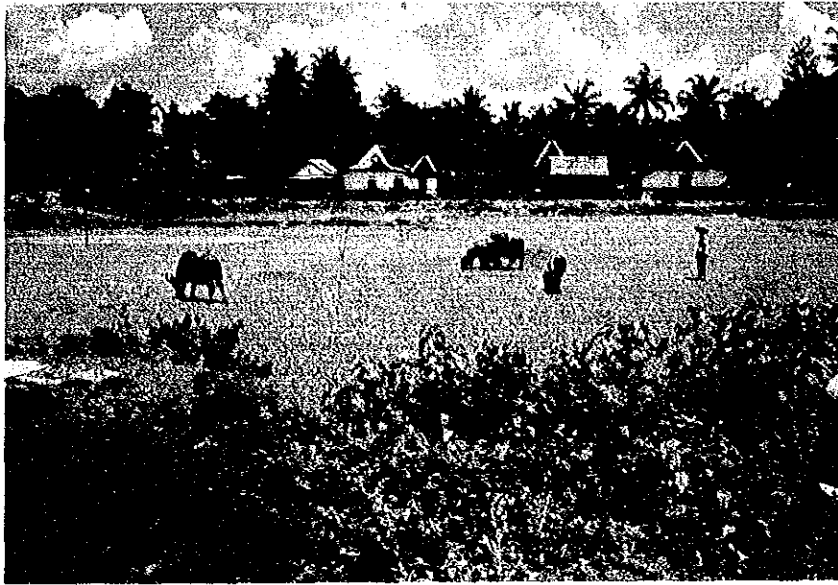


(センター所長の招待(昼食会))



(同上, 右端靴アドバイザー)





( 水牛の飼育風景 )



( 農家でブラーマン牛を飼育している )



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## 第一章 調査団の派遣

### 1. 経緯及び目的

インドネシア動物医薬品検定計画は、昭和59年4月より技術協力事業が開始され、「イ」国における動物用医薬品（生物学的製剤及び抗生物質）の検定を通じ、これらの有効性及び安全性を確保するための技術指導が実施中である。現在、技術協力も1年半を経過し、検定にかかる基礎技術の習得を中心にプロジェクト活動もようやく軌道に乗りかけており、着実にその成果が「イ」側カウンターパートへ移転されつつある。

当初にたてられた協力計画のスケジュールでは、まず検定基礎技術の移転確立を計画的に行い、その間に検定基準の作成を含む「イ」側の行政対応を完成させ、動物医薬品検査所の使命である国家検定に全面的に移行することとされた。

それは、検定技術が一定の水準以上に確保されていなければ、行政権力を行使する国家検定処分行為の是非をめぐり「イ」国内に混乱が生じかねないと危惧されるからである。

現在、「イ」側は同国の経済状況の悪化により、政府予算の伸びが期待できず、従ってプロジェクト運営予算の確保に苦慮している模様である。本検査所は、当初から検査にかかる検定手数料を徴収し、事業費に充当する計画であったが、現在の国家財政事情を考慮して、政府担当部局である畜産総局はプロジェクトを円滑に遂行するためのプロジェクト予算を確保するためには、出来るだけ早期に国家検定を開始して検定料を徴収し、これを国庫歳入とする見返りとして関連予算を確保したいとしている。

このような状況から、「イ」側はプロジェクトチーフ・アドバイザーを通じて、計画を早めて1986年4月から国家検定を開始したい意向を明らかにした。これらの経緯を踏えて、わが国においても関係者をまじえ、これの対応を協議した結果調査団を派遣してプロジェクトの現状を把握し、国家検定の可能性、その対象範囲、実務の方法、その他必要な事項を検討することとなった。

これらの背景から、今回、巡回指導調査団を派遣し、この問題を中心に、同時に専門家派遣等を含む今後の技術協力計画の細部を「イ」側と協議するとともに、助言及び指導を実施することとなったものである。

2. 調査団の構成

インドネシア動物医薬品検定・巡回指導チーム

担当業務	氏名	所 属
総括兼動物医薬品	緒方 宗雄	国際協力事業団，国際協力総合研修所 国際協力専門員
※ 家畜衛生	石丸 雅敏	農林水産省，動物医薬品検査所 検査第一部 豚コレラ予防液検査室
業務調整	銚之原節夫	国際協力事業団，農業開発協力部 畜産開発課

注) ※は短期専門家として派遣 (S.61.1.27～S.61.2.15)



### 3. 調査日程

#### 調 査 日 程

月 日	訪 問 先 ・ 協 議 等	備 考
1月27日(月)	東京—GA 873—→ジャカルタ	
1月28日(火)	ジャカルタ←→グヌンシンドール プロジェクトサイト視察, 所長表敬	・ Daman 総局長の都合により表敬翌日へ
1月29日(水)	ジャカルタ:(AM); 農業省畜産総局表敬, 日程打合せ (PM); 大使館, JICA事務所表敬	
1月30日(木)	ジャカルタ←→グヌンシンドール プロジェクト活動状況調査, 専門家との打合せ	・ 専門家派遣 ・ 研修員受入れ 他
1月31日(金)	ジャカルタ←→グヌンシンドール プロジェクト「イ」側職員(C/P)との協議・打合せ	・ プロジェクトの現状 ・ 職員配置計画
2月 1日(土)	資料収集	
2月 2日(日)	#	
2月 3日(月)	(AM): 畜産総局関係者との協議 合同委員会に関する打合せ, 協議	・ 国家検定の開始時期, 内容 ・ 専門家派遣計画
2月 4日(火)	(AM): 第2回プロジェクト合同委員会(畜産総局会議室) (PM): ジャカルタ—→チサルワ, 畜産総局主催 家畜衛生業績発表会視察	・ プロジェクト活動報告 ・ 巡回指導調査報告
2月 5日(水)	家畜衛生業績発表会	
2月 6日(木)	チサルワ—→ジャカルタ 大使館, JICA事務所報告	・ 団長招待晩餐会
2月 7日(金)	ジャカルタ—CX 500—→東京	・ 業務調整帰国

### 4. 訪問機関及び面会者

1) 農業省畜産総局 ( Directorate General of Livestock Services )

(1) 畜産総局長 Drh. Daman Danuwidjaja

( Director General of Livestock Services )

- (2) 家畜衛生局長 Drh. Masduki Partadiredja  
( Director of Animal Health, DGLS )
- (3) 家畜薬事課長 Drh. Tjiptardjo S.E  
( Chief, Veterinary Drug Control Sub Directorate, Directorate of  
Animal Health, DGLS )
- (4) 畜産総局付 (前家畜衛生局長) Drh. I.G.N. Teken Temadja  
( Senior staff, DGLS )
- (5) 海外援助プロジェクト調整官 Drh. Sukobagyo  
( Coordinator, Foreign Assisted Project, DGLS )
- (6) 家畜衛生局庶務課長 Mr. Paring Asmara  
( Administrative Officer, Directorate of Animal Health, DGLS )
- 2) 外務省事務官 Ms. Ida Susanty Munir  
( Staff, Department of Foreign Affairs )
- 3) 農業省 海外協力局 事務官 Ms. Mirah Ratna Dewi  
( Staff, Bureau of Foreign Cooperation, Department of  
Agriculture )
- 4) 動物医薬品検査所 ( Veterinary Drug Assay Laboratory )
- (1) 所 長 Drh, Yuntiwa Ramdan  
( Director of Veterinary Drug Assay Laboratory )
- (2) カウンターパート
- ① 抗生物質検定
- ・ Drh. Syamsul Bahri S. ( 室長 )
  - ・ Drh. Diana Hermawati
- ② ウイルス製剤検定
- ・ Drh. Mastur ( 室長 )
  - ・ Drh. Ida L. Soedijar
  - ・ Drh. Mochamad Lazuardi
- ③ 細菌製剤検定
- ・ Drh. Sumadi ( 室長 )
  - ・ Drh. K. Zarkasie
- ④ 実験動物飼育管理
- ・ Drh. I.G. AGUNG ( 室長 )
  - ・ Drh. Liliek Indrayani

5) その他の主な面会者（家畜衛生業績発表会にて）

(1) 家畜衛生試験場長 Dr. Purnomo

( Director, Research Institute for Animal Disease, Bogor )

(2) メダン家畜衛生センター所長 Drh. Adat P.

( Director, Disease Investigation Center, Medan )

・ Drh. Endang Susanto (元カウンターパート)

・ Drh. Andre Heryanto (元カウンターパート)

(3) タンジュンカラン家畜衛生センター所長 Drh. F.X. Soesilo

( Director, Disease Investigation Center, Tanjung Karang )

・ Drh. Hadi Prabowo (元カウンターパート)

・ Drh. Daman Husin ( " )

・ Drh. Sri Marfiatiningsih ( " )

(4) ブキティンギ家畜衛生センター所長 Drh. Soenardi

( Director, Disease Investigation Center, Bukit Tinggi )

(5) デンパサル家畜衛生センター所長 Drh. I. Gde Sudana

( Director, Disease Investigation Center, Denpasar )

6) 在「イ」大使館

(1) 鈴木一等書記官（農業担当）

7) JICA ジャカルタ事務所

(1) 佐藤職員

8) (株) 竹中工務店

(1) 坂田雄二（大阪本社）

9) (株) レーモンド設計事務所

(1) 伊藤一夫

## 第二章 協議指導の概要

### 1. 畜産総局長との会見

1月29日(A.M.)10:00, 畜産本局にDamn総局長を訪ね, 調査団訪イの挨拶を行った。

イ側は総局長のほか, マスドキイ家畜衛生局長, ユンチイワ動薬検査所長, チプタルジョ家畜衛生局薬事課長が同席し, 日側は調査団のほか, プロジェクトから梶チームリーダー, 須藤調整員が出席した。

総局長は, イ国の現在の畜産諸施策のなかで, 本プロジェクトのもつ意義と重要性を強調し, 同国がおかれている国家財政事情のもとで, 諸般の予算が大巾にカットされているなかでの事業の展開にあたって, とくに明年度における着実かつ実質的な事業の展開が期せられるならば, 組織としてより確固たるものとなるうと述べた。

調査団としては, 今回の訪イは, 本プロジェクトの経過, 現状をレビューし, さらに将来計画を協議するとともに, 第2回合同委員会へ参加することを目的とする旨を述べ, 少なくとも知るかぎりにおいて, 事業はほぼ予定のとおり進行しており, 課題としては, イ側として近く発足を企画している公的検定制度について, とくに技術的な立場から支援するとともに, 行政対応を含めた全体についても関心をもっており, 関係していかねばならないと述べた。

総局長は, また職員についても言及し, 新設機関であり, 若い職員が多く, 見習い中であるが, 不適と考える者はとりかえるなど, 必要な措置をとるとした。プロジェクトの成否は多分に人的な要素に左右され, 人材確保の重要性は同感である旨, 当方からも述べた。その他, 人工授精問題などについてもふれ, 当方から①センターの通信設備の整備, ②所長の格付け問題, ③予算確保について改めて総局長に要望した。

### 2. センターの現状

プロジェクトサイトである動物医薬品検査所は, ジャカルタ市郊外の車で約1時間の地にあり, 昨年, 開所式前に道路の補修と舗装が行われ, 支障なく通行することができるようになった。

#### (1) 施設

維持・管理は良好に行われているように判断され, これまでイ側及び専門家に上り指摘された欠点や不備も, インターホーンの整備を除いて完了している。本年1月, 施設完成後1年間の期間を終了するにあたり, コンサルタント, 施行者, ユーザーにより現状検査が行われ, 問題がないことが認められた。また現在までに日本の供与による建物施設に加えて, イ側において困障, 環境整備, 動物飼料庫, ガードマン詰所, 職員宿舎等の設置が行われている。

環境を含めて諸施設は極めて良好な状態に保持されており, 清潔度も申し分ないと判断さ

れた。

(2) 器具，機材

無償供与分，技術供与分ともによく使用されており，全般的に良好である。またそれらの管理も実験室ごとにきちんと登録され，スペアパーツ，消耗品その他の保管・整理も良好であった。

(3) イ側スタッフ

現在，職員は83名とかなり充足(表-1参照)され，それぞれ意欲的に業務を展開しているが，予算上の制約もあり，今後の増員は望み薄である。

表-1 職員配置状況及び計画

	1984/85	1985/86	1986/87	最終年 予 定
所 長	0	1	1	1
獣 医 師	10	17	17	29
薬 劑 師	0	1	1	1
技 術 者	6	18	18	64
事 務 員	7	5	5	10
そ の 他	21	41	42	55
合 計	44	83	84	160

ただし，当面必要とする技術職員(まだ経験は極めて少ないが)は確保され，目下，意欲的に研修・訓練中という現状である。

(4) 業 務

イ側スタッフは，検定に必要な各種検査法を体得すべく，専門家とともに業務を兼ねた訓練という形を中心に技術修得を進めており，技術の進歩とともに，検査成績も逐次集約されつつある。

細菌製剤，ウイルス製剤部門は上記のとおりであるが，それらの業務に必要な実験動物部門は生産体制に障害があつて計画どおりに進展していない。技術上，管理上，また予算上の課題であり，早急な解決を指摘しておいた。

抗生物質部門は，後年度計画に含まれ，専門家が未着のこともあつて，技術移転の進捗は遅いが，一般薬も含めて少しずつ手がけられている。

全体的にみると，ほぼ当初計画どおりの技術進展とみてよからう。実験動物を除いた3部門のセクションはお互いに競走関係にあり，張り合いながら発展する気運がみられるが，同時にセクト主義が起り，全体としての連携，協調に欠けるきらいが生じつつあるようにも

一部見受けられた。

専門家も、それぞれの専門分野を担当しつつ、さらに広い見地から指導、協力を行うよう留意する必要がある、同様にイ側スタッフもそのような行動が必要である。現状では、直接に専門家が担当、関係しない分野では、おうおうに専門家が知らないままに物事が進んでいる事例が指摘され、イ側に改善を喚起した。また、専門家側の勤務方法その他についても一考を要する点がみられ、関係者間で協議した。

以下に開所以来現在までの業務概況を、所報から抜粋する。

① 専門家派遣

これまでに派遣された専門家は表-2のとおりである。

表-2 派遣専門家

専門分野	氏名	派遣期間
チーフアドバイザー	緒方宗雄	1984年7月4日～1984年9月3日
〃	村松昌武	1985年3月27日～1985年6月26日
〃	梶隆	1985年8月23日～1986年8月22日
業務調整	須藤和男	1984年11月28日～1986年11月27日
細菌学	沢田拓士	1985年7月20日～1985年9月19日
〃	中村政幸	1985年8月23日～1986年8月22日
〃	北島千里	1985年9月20日～1987年9月19日
ウイルス学	小池生夫	1984年9月1日～1986年8月31日
〃	榊馨	1985年4月1日～1987年3月31日
実験動物	唐沢茂	1985年3月27日～1985年6月26日
〃	高橋隆	1985年9月20日～1985年12月19日

② 研修生受入れ

検定にかかる技術を修得するため、農林水産省動物医薬品検査所において細菌製剤、ウイルス製剤及び抗生物質製剤に関するプロジェクトカウンターパートの受入れ研修が行われた。実験動物飼養技術にかかる研修は(財)日本生物科学研究所小淵沢支所において実施された。この他、動物医薬品行政全般にわたる視察旅行も実施された(表-3参照)。

③ 検定業務

検査所の主たる機能はインドネシアに流通する動物用医薬品の検定である。検査所は、検査活動に必要な実験動物の飼養管理も併せて実施している。この他、検定法の開発研究、証明書発行、検定基準の作成等も行う。1985年4月から1986年3月までは、主として

表-3 研修員受入れ

名前	研修分野	期間
Drh. I. G. Agung Gde Anom	実験動物	1984年7月～1985年3月
Drh. Diana Hermawati	抗生物質	〃 〃
Drh. Sumadi	細菌学	〃 〃
Drh. Ida L. Soedijar	ウイルス学	〃 〃
Drh. Ahmad Maizir	実験動物	1985年6月～1986年2月
Drh. Unang Patriana	抗生物質	〃 〃
Drh. Siti Mariana	細菌学	〃 〃
Drh. Eka Astuti	ウイルス学	〃 〃
Drh. Yuntiwa Ramdan	視察旅行	1985年11月～1985年12月

検査所職員の検定基礎技術の訓練及び検定技術の試行期間であった。

これまでの主な活動は次のとおりである。

イ. 動物用医薬品のサンプル収集

動物用医薬品の製造・販売・小売業者について、国内製造あるいは輸入動物用医薬品のロットを調べ、サンプルを収去した。サンプルはこの他、州畜産事務所の薬事監視員を通じて収集された。これまでに収集された動物用医薬品は次のとおり。

- a. ワクチン, 抗血清, 診断液類
- b. 抗生物質, 化学療法剤, 一般薬
- c. 飼料添加物 (ビタミン, ミネラル, 特定抗生物質)

これらの内訳を1985年12月時点でみると,

・ビタミン及びミネラル	132点
・化学療法剤	63〃
・一般薬	35〃
・飼料添加剤	30〃
・ウイルス製剤(ワクチン)	66〃
・細菌製剤(ワクチン)	10〃
・診断液類	4〃
・伝統薬剤	3〃
・抗生物質	76〃
合計	419点

ロ. サンプルの試験及び検査

収集したサンプルは一般検査室でまず検査する。検査の内容は、特性試験，真空度試験，無菌試験，純粋性試験，防腐剤含有性試験である。これら試験の結果は表-4のとおり。

ウイルス製剤検査課では，ウイルス含有量試験，安全試験及び効力試験を実施する。検査する製剤の優先順位は，ニューカッスル病ワクチン，伝染性気管支炎，鶏脳脊髄炎及び鶏痘である。これらの結果は表-5のとおりである。

表-4 一般試験成績

試験の種類	サンプル数	結 果	
		合 格	不 合 格
特 性 試 験	54	54	—
真 空 度 試 験	35	30	5
無 菌 試 験	76	74	2
純 粋 性 試 験	29	29	—

表-5 ウィルス含有量試験(家禽ワクチン)

製造業者/販売業者	番号	ワクチンの種類	ワクチン株	ウィルス力価 log EID <sub>50</sub> /ドーズ	安定性 試 験
INTERVET (YUNAWATI)	012	ND	HB <sub>1</sub>	7.3	6.5
	013	ND	LASOTA	7.3	6.7
	014	ND	CLONE 30	7.2	5.9
	015	1B	H-120	4.5	
	016	1B	H-52	4.7	
	017	AE	—	4.0	
	018	1LT	—	2.9	
MAINE BIOLOGIC- AL LAB(SHS)	020	ND	B <sub>1</sub>	6.1	5.7
	021	ND	LASOTA	5.9	4.3
PHONE MERIEUX (EURINDO)	071	ND	HB <sub>1</sub>	5.7	5.3
	075	ND	LASOTA	6.5	4.7
	317	ND	LASOTA	6.5	5.9
	318	ND	HB <sub>1</sub>	7.1	5.7
VETMA	099A	ND	F	7.1	5.5
	099B	ND	K	5.9	5.1



製造業者/販売業者	番号	ワクチンの種類	ワクチン株	ウィルス力価 log EID <sub>50</sub> /ドーズ	安定性 試験
GIST BRUCADES (MEDION)	114	ND	LASOTA	5.7	4.7
	115	ND	CLONE LZ 58	6.5	5.9
WEBSTER (PYRIDAM)	153	ND	V4	6.5	4.5
CEVA(KAPC)	167	ND	LASOTA	6.1	4.3
	168	FP		3.3	
VAXSINDO(SHS)	249	ND	LASOTA	6.9	5.9
	250	ND	HB <sub>1</sub>	7.3	6.7
	251	FP		2.9	
POULTRY SHOP	315	ND	LASOTA	5.7	4.7
	319	ND	LASOTA	6.1	
	320	ND	HB <sub>1</sub>	5.9	
	321	ND	HB <sub>1</sub>	6.5	
	322	ND	HB <sub>1</sub>	4.7	
	323	ND	HB <sub>1</sub>	5.9	
	324	ND	LASOTA	4.9	
	325	ND	LASOTA	5.5	
	326	ND	HB <sub>1</sub>	5.3	
	327	ND	LASOTA	5.9	
	328	ND	B <sub>1</sub>	5.9	
329	ND	V <sub>4</sub>	5.7		
SALBURY(PAECO AGUNG)	336	ND	B <sub>1</sub>	6.1	
	337	ND	LASOTA	5.9	
	338	ILT		3.3	
	339	AE		3.5	
	340	IB		4.9	
	344	FP		3.3	
	435	FP		3.3	
IVAZ(LITO)	355	ND		6.1	
	356	ND	LASOTA	6.3	
	357	FP		3.7	
	358	IB	H 52	2.7	
	359	IB	H120	3.7	
	360	AE			

細菌製剤検査課では、細菌含有量試験、安全性試験及び力価試験を行う。検査するワクチンは、出血性敗血症、豚丹毒、炭疽、ブルセラ病、伝染性コリネバ及び家禽コレラワクチンである。診断液類としては、マイコプラズマ及びブルセラ病抗原がある。試験成績は表-6に示す。

表-6 細菌製剤試験成績

ワクチンの種類	数量	結 果		
		細菌含有量試験	安全性試験	力価試験
<u>Poultry Vaccine</u> Coryza	1	NT	100% no abnormal reaction develops	HI < 5
Fowl Cholera	2	NT	100% no abnormal reaction develops	NT
		NT	100% no abnormal reaction develops	NT
Mycoplasma	1	NT	TP	
<u>Large Animal Vaccine</u> Anthrax	2	$1.86 \times 10^6$	100% survive	10/12 survive
		$0.745 \times 10^3$	100% survive	SR
Haemorrhagic Septicemia	1	NT	NT	7/10 survive
Brucella	1	$14.5 \times 10^9$	100% survive titer: 200 iu organism: < $6.9 \times 10^9$ /91	NT
<u>Small Animal Vaccine</u> Erysipelas	1	NT	100% survive	SR
<u>Diagnostic Antigen</u> Mycoplasma Antigen	1	NT	NT	
Brucella Antigen (SAT)	1	NT	NT	
Brucella Antigen (RBT)	1	NT	NT	

NT: Not Tested  
TP: Test in Progress  
SR: Still Retest

抗生物質検査課では、現在、特性試験、含湿度試験及び毒性物質試験が実施中である。実験動物部門は、SPF卵を含む種々の動物の供給が計画され、これまでに表-7に示す動物が供給されている。

表-7 実験動物の供給

種 類	供 給 数 ( 頭 )	
	1984年	1985年
1. Mice	40	562
2. Guinea pig	20	700
3. Rabbit	20	100
4. Conventional chicken	100	500
5. SPF chicken	—	500
6. Conventional eggs	3,000	—
7. SPF eggs	1,000	3,000
8. Sheep	—	6
9. Goat	4	2
10. Buffalo	2	—
11. Cow	—	16

### 3. 今後の技術協力計画

#### (1) 専門家派遣

現在6名の長期専門家が派遣されている。チーフ・アドバイザー及び業務調整は、本年8月及び11月にそれぞれ任期終了となる。

細菌学1名は8月に任期終了となる。その交替は1987年3月下旬に1年間の任期で予定されている。ウィルス学及びその他の分野は、状況に応じて延長または交替する予定である。

短期専門家については、細菌学の基礎技術を指導するため、9月上旬より3ヶ月間の短期専門家が派遣される。また、抗生物質にかかる基礎技術を指導するため、4月上旬、7月上旬及び1987年1月上旬より、それぞれ短期専門家が3ヶ月間ずつ派遣される予定である。また、無菌・特性試験にかかる専門家が3月上旬より3ヶ月間派遣される。鶏病ワクチンに関する専門家は、8月上旬及び1987年2月中旬よりそれぞれ3ヶ月間の予定で派遣される。この他ウィルスワクチンの専門家が、1987年3月下旬より3ヶ月間派遣され、狂犬病ワクチンの検定法等につき指導する予定となっている。

実験動物にかかる専門家は、3月上旬より2ヶ月間の派遣予定で、特に発育が不完全なS

P F 鶏の飼育管理について技術指導する。実験動物分野については出来れば長期専門家の派遣が望まれている。

また、薬事行政にかかる短期専門家が1ヶ月間、5月中旬及び11月中旬より1名それぞれ派遣される予定である。

この他、60年度供与機材の据付けに関し、4月中旬より2ヶ月間の短期専門家が派遣される予定である。この専門家は特に、凍結乾燥機の据付け及びその他故障機材の修理・点検も併せて行う。

## (2) 研修生の受入れ

昭和61年度のプロジェクトカウンターパート研修生受入れについては早期受入れ枠4名が確保されていたので、まず日本側案を国内での協議をもとに提示した。この案は、ウィルス製剤(2名)、病理(1名)、実験動物(1名)というものであった。プロジェクト専門家と打合せる段階で「イ」側で既に候補者を選出しているということが判明した。この選定については、日本側専門家と必ずしも十分な協議がなされなかった模様である。

プロジェクト専門家と協議した結果、61年度分については、既に本人にもDr. Yuntawa 所長が通知したことを考慮に入れ、次年度以降については日本側と十分協議して候補者を決定するようにと団長から申し入れ、「イ」側案を受け入れた。

最終案について若干の説明を行うと、

- 1) ウィルス分野について、製剤数も多くスタッフの技術強化の必要性(日本側のねらい)は認めるが、現スタッフ中の1名が日本に長期留学がすでに予定されており、さらに2名を出すことは業務に大巾な支障を来すおそれがあるので、前回どおり1名としたいというものである。
- 2) 細菌については、日本側案にはないが現地専門家もその必要性を認め、引き続き1名を予定した。
- 3) 病理については、まだその体制ができておらず、まったくの未経験者の研修は実効が少ないという懸念があったが(現地専門家側から)、検定結果の判定に疑いがある場合などに有力な技術分野であること、前年度に派遣をひとまず予定し、予定者もあげられていることなどを勘案し、本分野を含めた。
- 4) 抗生物質分野は当該年度に日本側専門家が来イすることになるが、部長格である当該室長はまだ研修を受けておらず、やや短期間に圧縮した形で研修を受けさせることが適当であろうと判断された。
- 5) 実験動物については、検定業務の上台となる重要分野であるが、すでに2名の研修が実施中であり、今回は見送ることとなった。今後の方向としては、獣医専門家よりも畜産プロパーで、生産管理を重点においたスタッフの養成が必要であろうと考えられる。

なお、イ側に対しては、次回以降の研修計画(分野及び人選等)については具体案とな

る以前に前もって日本側とよく連絡協議して進められたい旨を要望しておいた。

またイ側からは西ドイツ協力の例にあるように獣医補助者（実験室テクニシャン）の研修についても配慮してもらいたい旨の発言があり、日本側としてはその可能性を検討する旨述べるとともに、獣医師以外の研修としては上記の実験動物についての畜産専攻、及び一般薬分析のための薬学ないし化学専攻者の研修を将来考えたいと述べた。

### (3) 機械供与

前年度供与分は良好に使用され、管理されており、特に問題はない。

本年度供与分については、イ側としては荷揚費、国内輸送費、その他、機械にかかる経費は、年度末の関係で1986年3月20日までに支出する必要があるため、早急な輸送を要請された。現在の調達計画ではぎりぎりのようであるので、一層の努力をするとともに（B L, シッピングリストの早期送付など）、次年度以降も同様なことにならぬよう早めに調達業務を行うよう措置する必要があると認められた。

1986/87年度供与予定については、明示はしなかったが総額およそ6,000万円程度で、主要器材等がすでに前2年間で完了しているため、消耗品等を中心に、対前年比約2/3程度になるものと思われるとイ側に伝達した。

別項に述べるように、イ側の1986/87年度予算は12.5%のカットであるため、本年度以上に現地側調達は困難になるものと思われる。日本側へ要請するにあたって、日伊双方で十二分に協議検討して、より実質的なものとなるよう配慮を要請した。

試験のための動物舎が不足しており、検定業務の遂行に将来支障を来すことになる。応急対策費等による対応が望まれる。

供与器材、携行機材の引き取りは、おおむね順調であったが、なかには月余を要する場合もあった。現在、イ国では無税通関手続（PP19）は1か月を要するので、(1)十分な時間的余裕をみて必要ドキュメントを作製送付されたいこと、(2)現実の荷物にドキュメントに記載のない物品を混在させないこと、(3)公用業務用と私用をドキュメント及び荷物ともに明確に区別して行うこと（どちらも免税ではあるが）等、が改めてイ側から要請されたので、関係者の留意を望みたい。

### (4) 国家検定業務の開始について

動物用医薬品の国家検定を目標とする本検査所は技術協力の公的スタートから約20ヶ月、施設の完成、開所式から約6ヶ月を経過し、所員も80名以上に達し、早急な業務の開始が望まれている。また、インドネシア側における現在の国家財政事情から歳入が期待される機関として一段と業務のスピードアップが期待されるにいたった。

国家検定制度の導入にあたっては、技術的、財政的、また法的行政的に対応を検討する必要があるが、本プロジェクトの性格から技術的な事項が中心となり、その他の事項については助言ないし勧告する程度にとどまるものと理解している。

ただし、現実には以上の三要素がそれぞれ関係し合うので、専門家側の分担ないし責任事項を明瞭にしえない部分も少なくない。

現在、およそのコンセンサスを得ており、また方向として定まっている事項を整理すると以下のとおりとなる。

#### 1) 検定の対象製剤

検定の対象とされる製剤としては、ワクチン及び抗生物質製剤とし、使用量が多い等家畜衛生上重要な製剤を対象とする。ただし、その検定方法が技術的にかなり高度なものが要求される製剤は、その態勢が整備されるまで対象とはしない。(例 混合生ワクチン)

以上の考え方で当面、以下の製剤が検定の対象とされている。

##### 生物学的製剤

- 1 ニューカッスル病生ワクチン
- 2 ニューカッスル病不活化ワクチン
- 3 鶏伝染性気管支炎生ワクチン
- 4 鶏痘生ワクチン
- 5 鶏脳脊髄炎生ワクチン
- 6 口蹄疫不活化ワクチン
- 7 狂犬病組織培養不活化ワクチン
- 8 狂犬病不活化ワクチン
- 9 緬山羊膿疹性皮膚炎生ワクチン
- 10 鶏伝染性コリーザ不活化ワクチン
- 11 家禽コレラ不活化ワクチン
- 12 炭疽生ワクチン
- 13 牛出血性敗血症不活化ワクチン
- 14 ブルセラ病生ワクチン
- 15 豚丹毒不活化ワクチン

##### 抗生物質製剤

現在、40品目の抗生物質製剤がインドネシア側で候補にあげている。

#### 2) 検定の段階・頻度等

該当製剤は①すべてのメーカー及び輸入業者のものとするか、あるいは特定業者のものだけにするか(例：政府機関の製造にかかるものは除く等)、②製造又は輸入のすべてのロット(バッチ)ごとに行うか、あるいは抜き取りか、③製造・輸入段階か、ディーラー段階か、④申請又は検定希望に応じ行うのか、強制義務検査か等の事項は検査所の能力としてどの程度の数量まで可能かなど、他の要素とも関連して検討、計画の要がある。

現在の考え方としては、検定の効率的運用等から、すべてのメーカー、輸入業者等のす

すべてのロット（バッチ）を対象とし、検定は製造・輸入段階のものについて強制義務検査である。

しかし、必要に応じ、ディーラー段階等にその段階を広げ、品質の比較、検査方法の改善に資することが必要になる。

### 3) 検査方法

動物用医薬品の安全性及び有効性を調べる方法は多数あり、どのような方法を行うかは技術上の難易、実用性、経済性、再現性等種々の要素を吟味しつつ、学問的にも評価に耐え得るものでなければならない。

しかし、そのすべてを一時に望むことは無理であるので、実用性を重視しつつ、基本的な検査方法を中心に計画する必要がある。現在までにインドネシア側カウンターパートが修得し、あるいは修得中の検査技術の中から、上述した観点により、それぞれの製剤について次のように計画されている。

- (イ) ニューカッスル病生ワクチン：特性，真空度，含湿度，生菌数限度，マイコプラズマ否定，サルモネラ否定，ウィルス含有量及び安全試験<sup>\*)</sup>
- (ロ) ニューカッスル病不活化ワクチン：特性，水素イオン濃度，無菌，染色及び安全試験<sup>\*)</sup>
- (ハ) 鶏伝染性気管支炎生ワクチン：特性，真空度，含湿度，生菌数限度，マイコプラズマ否定，サルモネラ否定，ウィルス含有量及び安全試験<sup>\*)</sup>
- (ニ) 鶏痘生ワクチン：特性，真空度，含湿度，生菌数限度，マイコプラズマ否定，サルモネラ否定，ウィルス含有量及び安全試験<sup>\*)</sup>
- (ホ) 鶏脳脊髄炎生ワクチン：特性，真空度，含湿度，生菌数限度，マイコプラズマ否定，サルモネラ否定，ウィルス含有量，及び安全試験<sup>\*)</sup>
- (ヘ) 口蹄疫不活化ワクチン：特性，水素イオン濃度，無菌，真菌否定，染色，安全及び力価試験
- (ト) 狂犬病組織培養不活化ワクチン：特性，水素イオン濃度，無菌，真菌否定，染色，不活化<sup>\*)</sup>及び力価試験<sup>\*)</sup>
- (チ) 狂犬病不活化ワクチン：特性，水素イオン濃度，無菌，真菌否定，染色，安全<sup>\*)</sup>及び力価試験<sup>\*)</sup>
- (リ) 緬山羊膿疹性皮膚炎生ワクチン：特性，水素イオン濃度，無菌，真菌否定及び染色試験
- (ヌ) 鶏伝染性コリネバクテリウム不活化ワクチン：特性，無菌，染色，安全<sup>\*)</sup>及び力価試験<sup>\*\*)</sup>
- (ル) 家禽コレラ不活化ワクチン：特性，無菌，染色及び安全試験<sup>\*)</sup>
- (レ) 炭疽生ワクチン：特性，無菌，染色，生菌数，夾雑菌否定，安全<sup>\*)</sup>及び力価試験<sup>\*\*\*)</sup>
- (ワ) 牛出血性敗血症不活化ワクチン：特性，無菌，染色，安全及び力価試験
- (カ) ブルセラ病生ワクチン：特性，真空度，含湿度，無菌，染色，生菌数，安全及び変異

## 試験

(3) 豚丹毒不活化ワクチン：特性，無菌，染色，安全及び力価試験<sup>\*\*\*)</sup>

注) \*)印 実験動物の安定確保がなされた場合に行う

\*\*)印 実験動物及び標準品の安定確保がなされた場合に行う

\*\*\*)印 標準品の安定確保がなされた場合に行う

## 抗生物質製剤

インドネシア側は，日本人専門家の着任をまって該当品の検査項目を決定したい意向である。

なお，これら試験項目は技術の進展，検査体制の整備強化に伴い，逐次増加，改善されることは当然である。

## 4) 合否の基準

検定の試験結果の判定は極めて重要な検討事項である。現在進行中の予備的検査により逐次判定のための資料が得られつつあるが，なお，当分の間はこの種のデータや資料の収集を行わなければ実際的な基準とはなり得ない。

したがって，当面は検査の結果を総合してケースバイケースで判定し，その蓄積の上に近い将来Minimum Requirement的なものを策定するのが実際的であろうと考えられる。

## 5) その他

検定に関するその他の事項としては，検定申請の手続き，抜取り品の本数及びその方法，検定手数料，検定結果の申請者への通知方法，合格品であることの証明手段，不合格品の取扱い等が考えられる。これら事項についてはインドネシア側で作業中のものが多かったが，インドネシアにおける動物用医薬品の実情，監視指導体制等を考慮し，現実的な検討を行い，検定の開始までに整備する必要がある。



### 第三章 第2回合同委員会の開催

インドネシア動物医薬品検定プロジェクトの第2回日・イ合同委員会は、2月4日、農業省畜産総局会議室においてDaman総局長、梶チーフ・アドバイザー、Yuntiwa動薬検所長他及び日本側巡回指導チーム（緒方団長他2名）及び現地大使館、JICA関係者がオブザーバーとして出席のもとに開催された。

はじめに、Daman総局長から巡回指導チーム緒方団長への歓迎のあいさつがあった。同時に、今回の合同委員会の議事結果等について緒方団長へコメントを求めたい旨の依頼があり、会議に入った。まず、プロジェクト「イ」側代表としてYuntiwa所長が、「イ」側でまとめたプロジェクトのこれまでの成果及び進捗状況を報告した。続いて、梶アドバイザーが専門家チームを代表してプロジェクトの成果及び現状及び問題点を報告した。

この後、巡回指導チームが期間中に調査したサマリーレポートを提議し、協議の上承認された。今回の合同委員会での最大の課題は、1986年4月より「イ」側が実施を予定している国家検定をどう取扱うかということであった。この点について、技術的及び財政的観点から、国家検定はまず技術的に可能なものから実行に移し、順次医薬品の幅を広げて行くということで意見が一致した。なお、「イ」側は、4月の検定実施を前に検定手数料等の告示の準備にかかっている。

この他、専門家の派遣計画、機材供与についての今後の考え方、研修生の受入れ等が事前の「イ」側との打合せどおり承認された。プロジェクトの問題点は、「イ」側の財政緊縮の中でのプロジェクト予算の確保であるが、農業省全体の予算が50%前後削減されるなかで、本プロジェクトの予算は前年比12%減という厳しい環境のもとでも恵まれていると言えよう。しかし、国家検定の実施のためにはSPF卵及び実験動物の安定供給のための購入費用等解決されるべき予算上の問題もある。この点に関して、「イ」側は検定が実施され手数料収入が入るようになれば見返りとしての予算割当てが増えることを期待している。

同委員会に提出した調査団リポートは以下のとおりである。

SUMMARY REPORT OF THE JAPANESE TECHNICAL GUIDANCE TEAM  
FOR THE VETERINARY DRUG CONTROL PROJECT (ATA-297)

In pursuance of activities under the Record of Discussion (R/D) signed on February 11, 1984, the Japanese Guidance Team headed by Dr. Muneo OGATA, organized by the Japan International Cooperation Agency (JICA), visited the Republic of Indonesia from January 27 to February 7, 1986, in order to discuss the details of the Project progress and to provide necessary guidance for successful implementation of the Project with Indonesian authorities concerned.

The following is the summary :

1. GENERAL

- 1-1 The technical cooperation is performed in accordance with the provisions of the R/D signed on February 11, 1984 and implemented by the operational working plan which was established on January 31, 1985.
- 1-2 The Veterinary Drug Assay Laboratory which acts as a base of the project was constructed in January 1985 by Japanese Grant Aid and was officially opened on August 2, 1985.
- 1-3 All the preparatory works and construction of the supplementary buildings was conducted by the Indonesian side. Further construction will be expected for the successive years.
- 1-4 The status of the Laboratory has been partially provided by the Ministerial Ordinance of Department of Agriculture No. 328/Kpts/TN.260/4/1985.  
However, the Ordinance of Ministry of Administrative Reform should be decreed to officially establish the Laboratory.

2. ALLOCATION OF STAFF

2-1 The Director of the Laboratory was assigned in March, 1985 as being directly responsible for the Laboratory. The position of the Director will be further considered as agreed upon in the Explanatory Notes of the R/D which state that "as no less than the same position as Director of Directorates under Directorate General of Livestock Services".

2-2 Ten (10) veterinary officers have already been allocated for the Project in fiscal year 1984/85. During fiscal year 1985/86, 8 veterinarians, 1 Pharmacist, and 12 other technical staff have been recruited.

2-3 Total employment of the Laboratory is steadily increased and expanded as shown in the following table. By the time of full operation, it is scheduled that the staff will amount to more than 150 persons.

	End of Fiscal year 1984/85	Present 1985/86	Scheduled 1986/87	Final
Director	0	1	1	1
Veterinarians	10	17	17	29
Pharmacist	0	1	1	1
Other technical staff	6	18	18	64
Clerical staff	7	5	5	10
Others	21	41	42	55
Total	44	83	84	160

2-4 The fulfillment of the actual staffing was revealed to be insufficient when compared to the Table above. It is strongly suggested to focus due consideration on this matter for smooth development of the operation, particularly when introducing an official drug control scheme.

### 3. BUDGETARY PROVISIONS

3-1 The operational budget, particularly for purchasing expendable goods, is regarded as being insufficient. This will greatly hinder laboratory operation and technical transfer which is necessary for establishing quality control of veterinary drugs in the Laboratory.

3-2 Allocation of the budget in recent years including the immediate future is as follows :

In fiscal year 1986/87 the National budget for agriculture sector has decreased approximately 50% comparing with the previous year.

However, the budget of the Assay Project is deducted 12% in the same fiscal year.

Fiscal year 1983/84		1984/85		1985/86	1986/87
Plan	Executed	Plan	Executed	Allocated	Allocated
27.5	27.5	600	597.2	200	175.0

Mil.Rp

### 4. JAPANESE CONTRIBUTION

#### 4-1 Despatch of Missions

Within the framework of the technical cooperation programme, JICA has provided (1) An Implementation Survey Team headed by Dr. M. Sawada from Feb.1 to 15, 1984, for preparation of the R/D, (2) A Consultation Team headed by Dr. S. Tanaka from Jan.20 to Feb.2, 1985 for setting up the operational working plan, and (3) A Guidance Team headed by Dr. M. Ogata from Jan.27 to Feb.7, 1986 for technical guidance of the Project, respectively.

#### 4-2 Assignment of the Japanese Experts

(1) As short term experts, 8 experts were assigned in the fields of advice, preparatory survey, bacteriology, and experimental animals for approximately 18 man/month in total.

- (2) As long term experts, an expert covering viral products was firstly assigned on Sept. 1, 1984 and gradually strengthened by Sept. 1985 to meet the plan established in the Annex of the R/D.

The number and fields of the experts at present are as follows :

Advisor .....	1
Coordinator/Liaison Officer .....	1
Virology .....	2
Bacteriology .....	2
Total	<u>6</u>

Note: The expert on experimental animals will be dispatched on a short term basis, and the anti-biotics expert will be sent in the year 1986/87 to meet the working plan.

- (3) Immediate future assignment of the Japanese experts was discussed and formulated as shown in the attached figure.

#### 4-3 Provisions of Equipments, etc.

- (1) Ninety three (93) million yen equivalent equipment, instruments and other materials for the Project were provided in fiscal year 1984/85.
- (2) Approximately 90 million yen equivalent of those goods have also been procured in fiscal year 1985/86 by the same manner.
- (3) Customs duties, internal taxes and other charges imposed on the equipments as well as the expenses for their transportation, installation, operation and maintenance are sufficiently covered by the Indonesian side as provided by the R/D. However it was pointed out that there were a few cases which needed considerable time for custom clearance procedures.

- (4) Maintenance and control of these equipments and materials in the Laboratory have been judged in general as reasonable and appropriate.

#### 4-4 Training of the Counterpart Officials in Japan

- (1) Four counterpart Indonesian veterinarians were invited for technical training for 7 months at the Veterinary Assay Laboratory, Ministry of Agriculture, Forestry and Fisheries and Nippon Institute for Biological Science, Tokyo, and other institutions in fiscal year 1984/85.
- (2) The same type of training has been conducted for 4 counterpart officials in fiscal year 1985/86. Furthermore, the Director of the Laboratory was invited for short term observation tour to familiarize himself with the actual situation of pharmaceutical affairs in Japan.
- (3) In fiscal year 1986/87, 4 counterpart personnel will also be accepted for training of assay technique in Japan.
- (4) It is noted that all the participants studied with full competence and successfully accomplished their purposes of training.

#### 5. PROGRESS AND COMMENTS

5-1 .The laboratory facilities and equipments were prepared and set up by June 1985. They are almost fully operational at present. On the other hand, laboratory technology has been trained from its basic elements since July 1985 because most of the staff assigned to the Project had little experience in laboratory services before their assignment.

5-2 Preparatory work for laboratories such as cleaning and sterilization of glassware, preparation of chemicals and culture media, etc. have been almost fully established at present.

5-3 Production and supply of experimental animals are still in progress. It is noted that :

- (1) The Management and production of experimental animal shall be further strengthened in order to supply the experimental animals needed for scheduled assay.
- (2) Growth abnormalities of SPF hatched chicks were observed, and should be immediately solved.
- (3) Re-arrangement of mouse colonies is needed for planned production.
- (4) Production of guinea pigs will be routinely available early this year.

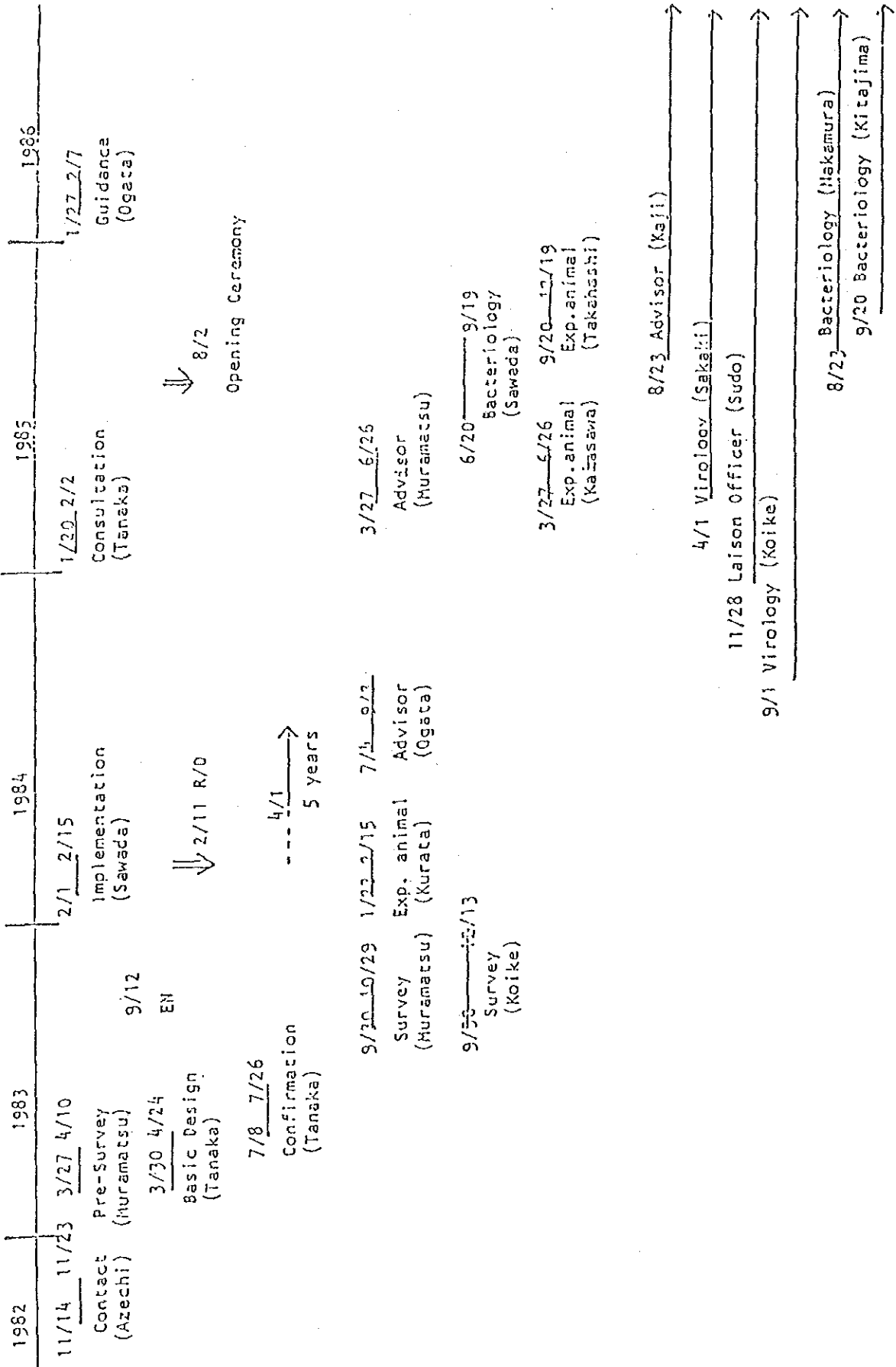
5-4 Basic laboratory techniques for quality control of viral vaccines such as primary cell culture, tissue culture, storage and passage of cell lines, HI test, virus titration, egg inoculation test, etc. have been introduced. For proper adaptation of these techniques, repeated trials and practice are necessary.

5-5 Bacteriological techniques such as staining, cultivation, examination of biological characters of bacteria, preparation of immune sera, etc. have been trained. Generally speaking, this has not yet reached sufficient level to conduct reliable tests and examination routinely to control the quality of specified products.

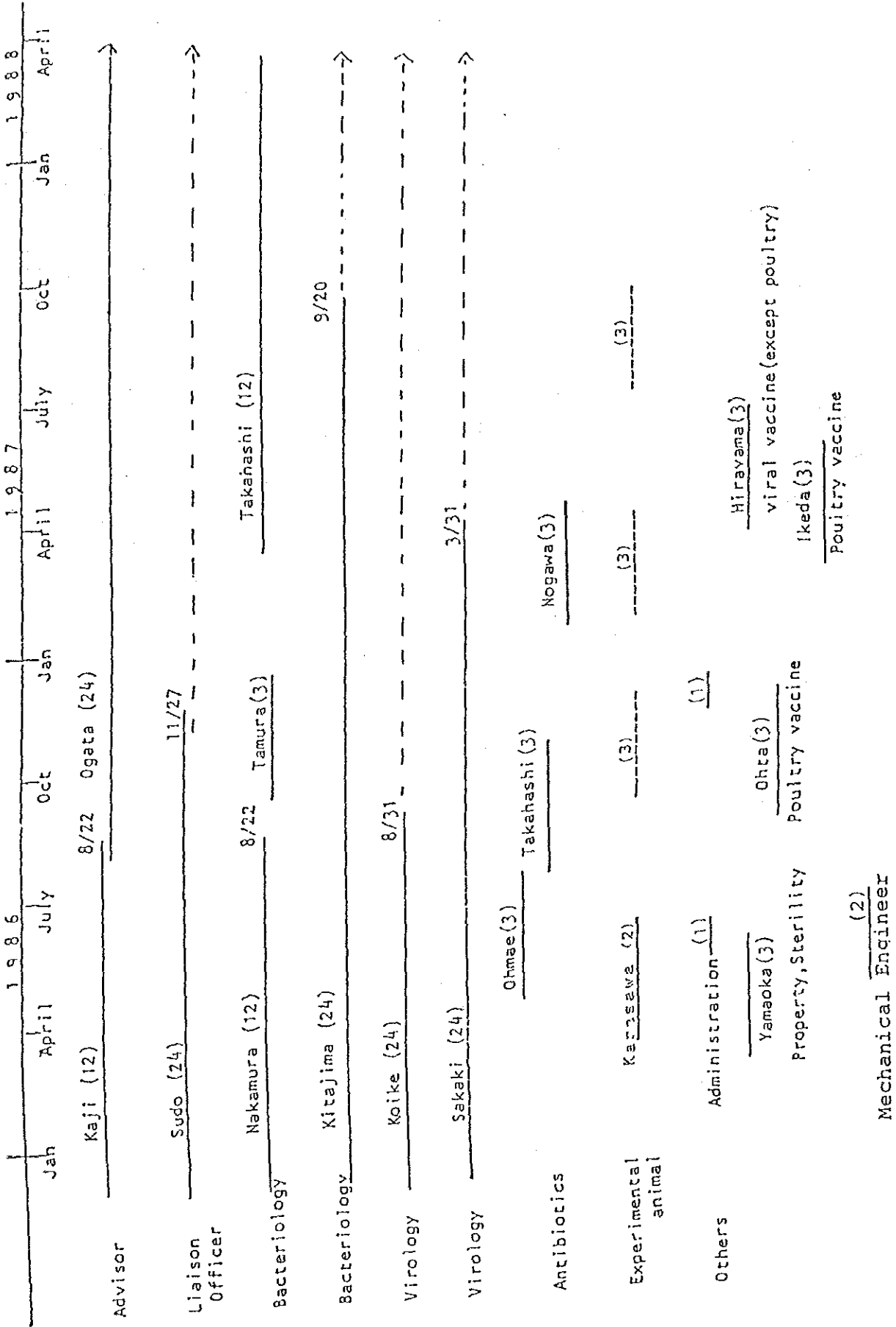
- 5-6 Studies for establishment of standard requirements for veterinary drugs' assay has been conducted. For this purpose, collection and analysis of data and references on marketed drugs of various kinds are still needed.
- 5-7 The Indonesian side has requested launching of an official assay as early as possible (preferably beginning of fiscal year 1986/87). Under the present circumstances, various factors and procedures to be considered before implementing the said system were discussed and analysed such as from the technical, financial, and legal or administrative point of views. It is concluded as advisable to proceed steadily and gradually to expand the kind of drugs to be assayed and to arrange to intensify the tests and examinations needed for scientific evaluation of the quality of the specified drugs.



JAPANESE MISSION AND EXPERTS FOR THE PROJECT



ASSIGNMENT SCHEDULE OF JAPANESE EXPERTS



VALUABLE RESULTS OF DISEASE INVESTIGATION CENTER ACTIVITIES  
IN THE REGION OF LAMPUNG, SUMTRA SELATAN AND BENGKULU  
WITHIN THE THIRD FIVE YEARS DEVELOPMENT PLAN

By :

DRH. FX. SOESILO



DEPARTEMENT OF AGRICULTURE  
DIRECTORATE GENERAL OF ANIMAL HUSBANDRY  
ANIMAL DISEASE INVESTIGATION CENTER  
REGION III BANDAR LAMPUNG

F O R E W O R D

There are two main duties of DIC III, firstly to carry out the Technical Cooperation Project between Japanese and Indonesian Government in the frame of Animal Health Improvement Program, and secondly to support National development plan in the region.

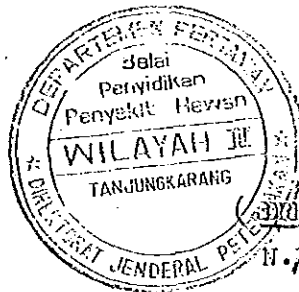
The management of DIC III has been evaluated three times by Japanese authorities team and Indonesian authorities team. The result of their evaluation provided a conclusion that DIC III was well developed and full-grow of advancement.

This present paper is to describe properly the output of what DIC III has doing things and activities during the Third Five Years Development Plan.

DIC III attempt to have more develope, more progress and more advance than yesterday and give up to our lovely nation of the Republic of Indonesia.

Bandar Lampung, June, 1984.-

Animal Disease Investigation Center Region III  
Bandar Lampung



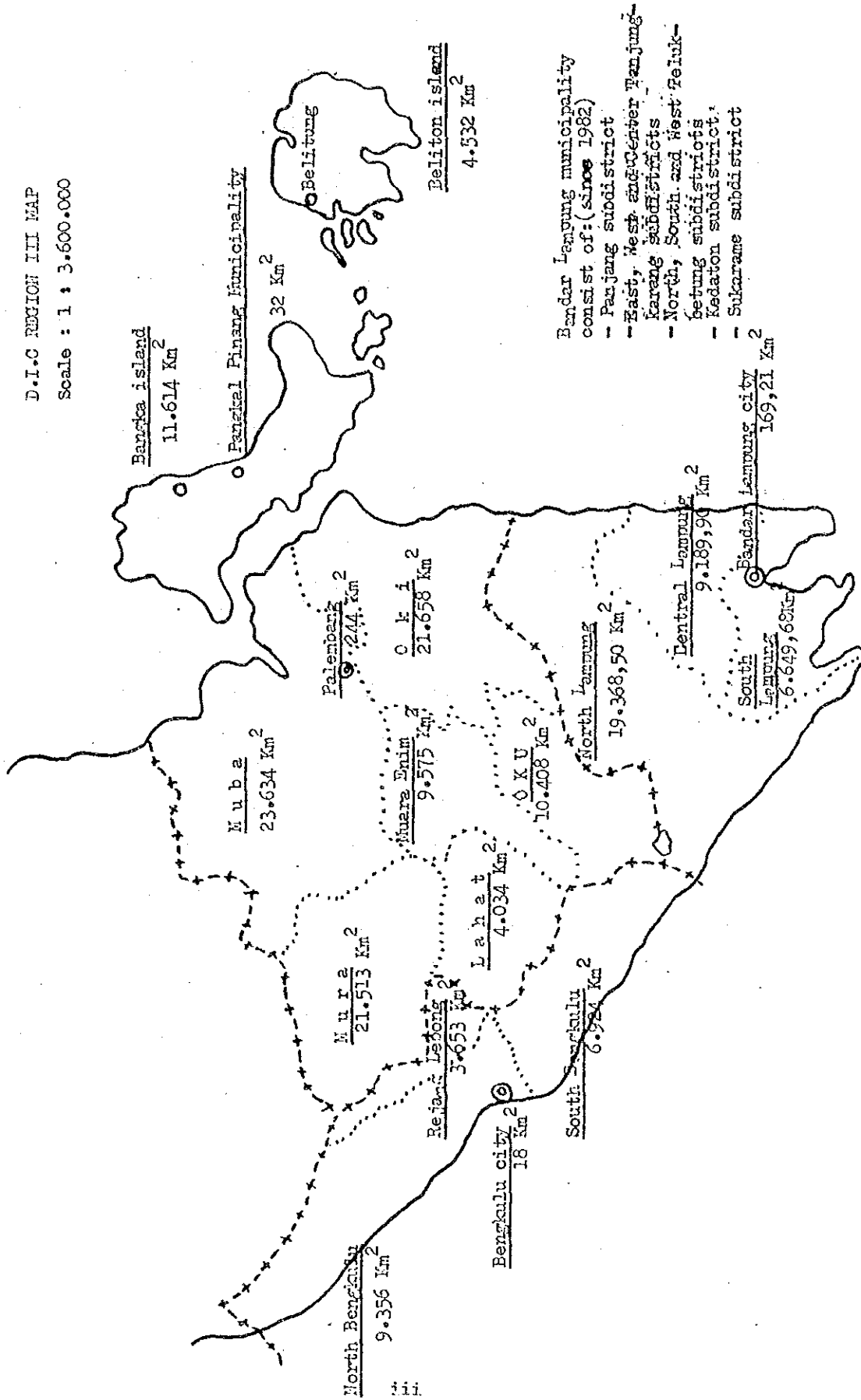
Head,

(Dr. F.K. SOESTIO)

N.P. 500.039.660

D.I-C REGION III MAP

Scale : 1 : 3.600.000



## HISTORICAL SYNOPSIS

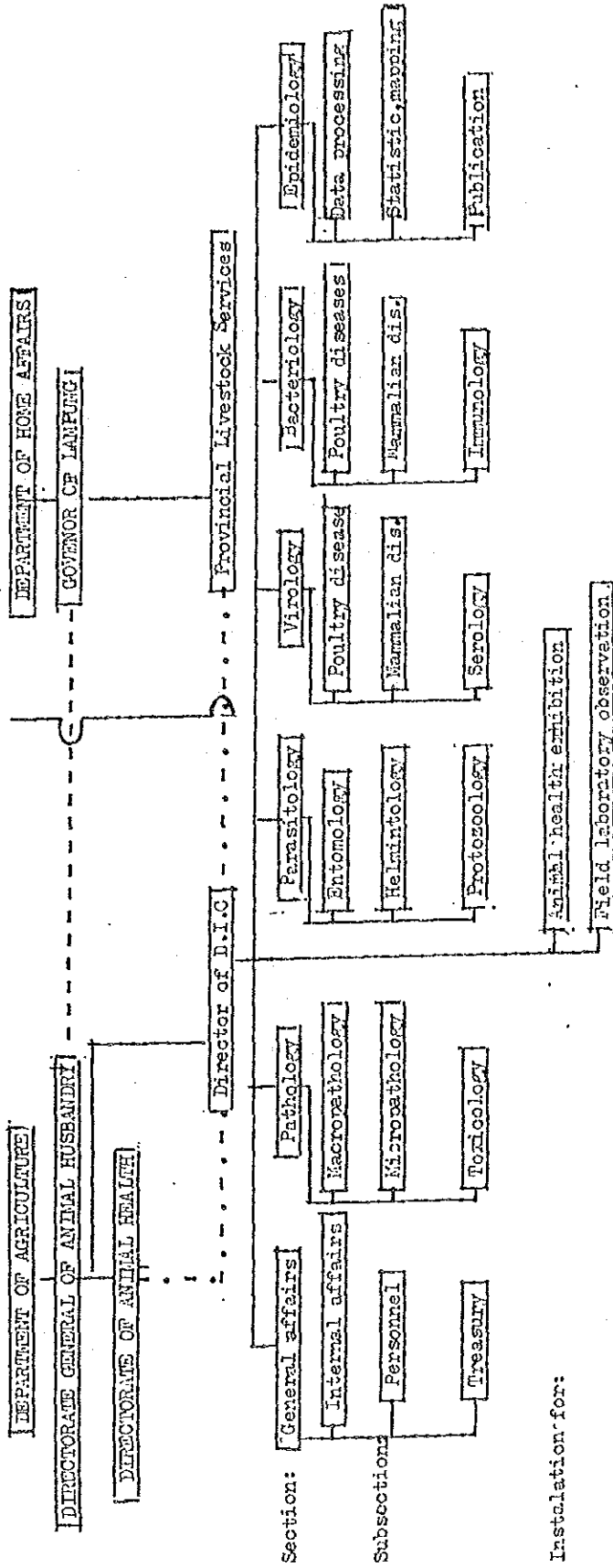
- July 7, 1977 The three years Technical Cooperation Project on Animal Health Improvement Program was signed by the representatives of Japanese government and Indonesian government. Construction of two Animal Disease Investigation Centers in Medan and Tanjungkarang were involved.
- May 13, 1978 The Minister of Reformation of Government Apparatus issued decree no. B.512/I/Menpan/5/1978, about the existence of the Technical Executive Unit attached to the Directorate General of Animal Husbandry, based on the decree no. 190/KPTS/Org/5/1975 issued by the Minister of Agriculture.
- May 25, 1978 The Minister of Agriculture issued a decree no. 315/KPTS/Org/5/1978 about the legalization of the organization and the Job description of the Animal Disease Investigation Center. There are seven centers in Indonesia located in Medan, Bukit Tinggi, Tanjungkarang is now Bandar Lampung, Yogyakarta, Banjar Baru, Denpasar and Ujung Pandang.
- November 25, 1978 The Minister of Agriculture officially opened the establishment of Disease Investigation Center Region I Medan and Region III Tanjungkarang, in Medan South Sumatra.
- July 7, 1980 The Technical Cooperation Project on Animal Health Improvement Program was extended for two years.
- July 7, 1982 The Technical Cooperation Project had actually ended. But the third evaluation concluded that the project could be extended at least for two years.
- July 7, 1984 The Cooperation Project is really terminated.

THE POTENCY OF THE REGION

1. GEOGRAPHICAL VIEW

	Lampung	Sumatra Selatan	Bengkulu
Area (Km <sup>2</sup> )	33.376,50	109.254,00	19.815,60
Number of			
-Distrios	4	10	4
-Subdistrios	71	86	23
-Villages	1.484	>1.200	1.113
Rainfall (mm)	2.000 - 3000	1.700 - 3.900	2.000 - 3.900
Temperature (°C)	21 - 32	21 - 35	21 - 32
Humidity (%)	70 - 80	66 - 99	70 - 99
2. P e o p l e	5.178.775	4.943.926	854.214
3. A n i m a l s			
-Indigenous chicken	20.009.676	4.940.000	1.778.250
-Strange breed chicken	1.347.133	426.000	90.500
-D u c k s	1.731.344	795.000	342.600
-Cattle	94.798	245.655	50.660
-Buffaloes	33.388	109.839	64.712
-Horses	473	2.318	145
-Goat	176.162	331.580	86.432
-Sheep	30.337	90.362	21.966
-Swine	38.807	79.615	175
No.2 and 3 are recorded from annual report	1983/1984	1982/1983	1982/1983

ORGANIZATION OF D.I.C.I.I.I.



Installation for:

Description: ————— Commanding lines

----- Coordination lines

----- Functional lines

Epidemiology section has been established since 1982/1983.

This charge has been established according to the Decree of Minister of Agriculture no.315/KPTS/Org/5/1978 and Degree of Minister of Reformation of Government Apparatus no. B.512/T/Manpan/5/1978.



## F U N C T I O N O F D I C

Twelve functions of DIC have been stated through Letter of Decision of Director General of Animal Husbandry no.557/KPTS/DJP/DEPTAN/1980, as follows:

1. Investigation is a chain of activities to trace any aspects of animal disease and background of the onset of the disease in order to diagnose and prevent the disease being investigated.
2. Active service to farmers is a chain of animal health activities including extension, animal health examination, specimen collection, treatment, and eradication. It should be executed together with Livestock Services.
3. Animal health examination is a procedure to examine suspected diseased or flock animals in the field and also at the DIC to support the task of Livestock Services.
4. Active surveillance is a long term observation of herds to identify any kind of problems.
5. To diagnose animal disease is a method to identify any kind of diseases through specimen examination. Such specimen are submitted from the field to the DIC or specimen owned by the DIC itself.
6. Repeat test the potency of released vaccine and evaluating the result of vaccination is to repeat the test of vaccine which have been released to Livestock Services or market and to know the effectiveness of these vaccines through antibody tests.
7. Limited research is the activities to find out the cause and the method of preventing an explosive disease occurring in the field as quickly as possible.
8. Disease control is to advise Livestock Services on how to control the disease in their region.
9. Disease mapping is to illustrate the disease situation in the region and factors associated with the disease.
10. Veterinary Public Health is to examine materials originating from animals, the well processed materials originating from animals, and other kind of materials and to investigate the zoonotic diseases.
11. Guiding the provincial type laboratory is to lead the animal health laboratory daughter of Livestock Services with regard to the aspects of general affairs management and field operational programmes.
12. Animal health training is a particular training held for veterinarians and veterinary assistance to grade up their knowledge and skills.

THE INTERCHAIN OF SPECIMEN , APPLICANTS AND LABORATORY

THE TERMINOLOGY OF SPECIMEN

Specimen are everything assumed to be contaminated by any kind of diseases or micro-organisms (agents), including all parts of animals' body or the dead animals, the ill-health or suspected animals, preserved or not, preserved in a particular conservants, and have to be examined in animal health laboratory.

A P P L I C A N T S

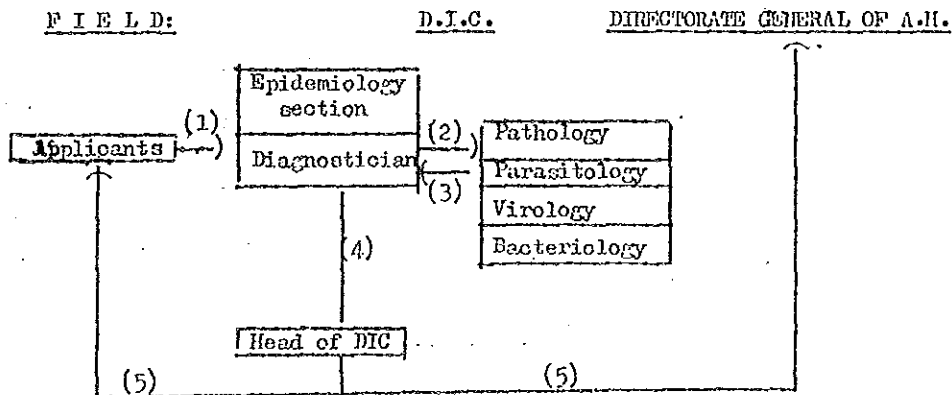
Applicants are laboratory users comprised of either government and private institutions or common people especially farmers community who are needed laboratory services, e.g.: Livestock Services, B and C type laboratories, Animal quarantine, Technical Executive Units of Livestock Services, Animal Breeding and forage Units, Animal Biologics Center Surabaya, Research Institute of Animal Disease Bogor, Faculty of Veterinary Medicine, Natural Resources Conservation Center, Zoological Garden, Public Health Services, Pasteur Institute Bandung, Breeding farms, animal farmers owners, Poultry-shops, Agency of Atomic Research and Development, Agro-industry Research Center and so on.

THE MECHANISM OF SPECIMEN

There are two ways flow of specimen:

1. Classical way of approach in which a laboratory stands passively to receive specimen from applicants.
2. Two way traffic approach in which a laboratory and applicants cooperate each other. The laboratory sell her services closely to applicants or community through active services, investigation, animal health examination and surveillance, and the applicants do actively and responsively to send specimen to animal health laboratory.

The management of specimen is illustrated as follows:



## I. INTRODUCTION

Animal Disease Investigation Centers were born in Indonesia within the Five Years Development Plan. It is quite natural we wish to have these institutional, because Indonesia having an idea and plan to develop the intelligence of the people. Animal protein is one of the essential substance to grade up mental ability of the people.

The development of animal husbandry in Indonesia aimed to increase animal population, animal production, export drives from animal sector and lessen import from animal sector. This idea has a closed chain to animal commodities existence and the efforts of their conservation.

Disease Investigation Center plays a very important roles actively to keep and to protect the animals against any kind of disaster by doing regular investigation, to get very early diagnosis or identification of the disease.

This paper to present the progress and achievement of Disease Investigation Center Region III Bandar Lampung (DIC III) within the Third Five Years Development Plan. During with DIC III has been guided technically under The Cooperation Project between Japanese Government and Indonesian Government in the frame of Animal Health Improvement Program, which will be terminated in July 1984.

## II. ADMINISTRATIVE MANAGEMENT

### A. PERSONNEL

1. Number of local workers : During the Third Five Years Development Plan number of local workers increased annually. See table 1 below.

Table 1. Number of local workers.

Description:	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84
Veterinarians	3	5	7	7	8	8
Vet. Assistance	2	6	10	14	17	17
Junior Vet. Ass.	1	2	4	6	6	6
General Affairs Workers	10	16	21	23	28	34
Total number :	16	28	42	50	59	65
Receive fully salary	1	3	5	15	20	25
Receive 80% salary	0	2	10	6	8	23
Free workers	15	24	27	29	31	17

According to Record of Discussion (RD), DIC III must employ 9 veterinarians, so we have one veterinarian remain. Nevertheless we have now 5 technical sections, so three more veterinarians remain.

2. Experts: Due to Record of Discussion the Japanese Government grant including dispatching experts through JICA. Their function is to transfer expertise and technology in animal health science. There were 17 experts have been assigned at DIC III as shown in table 2.

Table 2. Number of Japanese experts have been assigned at DIC Region III Bandar Lampung.

Names:	Profession:	Duration of stay:
1. Tomatsu OGATA	-- Virologist	1 year (1978/79)
2. Masashi UEDA	-- Microbiologist	1½ year (1978/80)
3. Mitsuaki HAYASHI	-- Biochemist	2 weeks (1980)
4. Junji YAMAGUCHI	-- Microbiologist	3 months (1980)
5. Iohiro IWANOTO	-- Virologist	3 weeks (1980)
6. Masahiro NODA	-- Virologist	1 Year (1980/81)
7. Hayami OBARA	-- Microbiologist	1 Year (1980/81)
8. Ruizo ISHITANI	-- Professor, Pathologist	4 years (1980/84)
9. Yasuo MIURA	-- Virologist	5 weeks (1981)
10. Kimiaki TAGUCHI	-- Microbiologist	1 year (1981/82)
11. Toshitaka KAWANO	-- Virologist	6 months (1982)
12. Yoshio BIGUCHI	-- Virologist	3 weeks (1982)
13. Kazuo AKIBA	-- Parasitologist	1½ months (1982/83)
14. Setsuo ARAI	-- Virologist	3 months (1983)
15. Kazunori HASHIMOTO	-- Bacteriologist	1 week (1983)
16. Seiji KAWANISHI	-- Biochemist	3 days (1984)
17. Tsukasa MIYASHITA	-- Bacteriologist	3 months (1984)

Their capability and responsibility almost satisfied, and they have good cooperation with their Indonesian counterparts.

Besides those expert there was an other expert from Canadian International Development Agency assigned to DIC Yogyakarta, Dr Daniel Henry Arthur Unruh MSc., a pathologist and epidemiologist who served us for about one and half months in 1983.

### 3. The development of DIC III workers

- a. Eight veterinarians have been trained in Japan for 6 months each.
- b. Head of DIC III joined an observation tour on animal health objects held by JICA in 1980.
- c. About 70% of the workers have joined a short term course on how to have good relevance and appliance towards The Five Principles of Indonesian Philosophy.
- d. Drh Hadi Prabowo, Drh Siti Chotiah and Drh I Made Spastawa have been trained as Animal Health Inspectors in the frame of cattle importation from Australia.
- e. Head of DIC III has joined a highly management course for echelon 3 group managers in Ciawi, Bogor, for 3 months in 1980.
- f. F.X. Goenarso has attended 3 months Treasury management course in Lawang, East Java, in 1980.
- g. Drh Sri Marfiatiningsih has attended 2 months Course on Epidemiology and Veterinary Economy in Bali, in 1981.
- h. Drh Darman Husin, Drh Sayidi Aryono and two electricians have been trained in Electrical power management by L.M. Davies, an FAO ex-

- pert originally from Australia, in 1982.
- i. Rachmat Santosa and Samsiah, both from General affairs section have been trained on Office material management, in 1982/83.
  - j. Head of DIC III has joined Veterinary Administration Development Programm training the trainers in New Zealand in 1982 for 3 weeks in the frame of ASEAN Veterinarians cooperation.
  - k. Drh Siti Chotiah has attended a Six weeks Training Course on Vector Biology, held by SEAMEO-BIOTROP at Ciawi, Bogor in 1983.
  - l. Agus Mardi Santosa, Didi Kurniadi, Drh Hadit Prabowo and Ediwan have been trained in photography at Agricultural Information Center Tegineneng Lampung, in 1983/1984.
  - m. Mrs Sri Astuti has been trained on Biochemistry at DIC I Medan in 1984 for one month.
  - n. Miss Agustina Elizabeth staff member of Epidemiology section has been trained on Basis Programming by using Micro computer held by Agricultural Processing Data Center, Departement of Agriculture in Jakarta in 1984.
  - o. Chief of General affairs has attended a week seminar on Newly methods how to manage and maintain government archives and documents, held by Secretariate General of Agriculture in Bandar Lampung, in 1984.

#### B. NATIONAL BUDGET AND FOREIGN AID

	National budget		Foreign aid ATA - 133 ( '000 Yen )
	Routine: ( '000 rupiah )	Project:	
1978/79	0	40.185	30.000
1979/80	8.497	40.000	30.000
1980/81	18.758	50.000	20.000
1981/82	26.813	73.500	20.000
1982/83	33.700	100.000	7.500
1983/84	42.400	87.156	7.500

Additional aid from Japanese Government through Japan International Cooperation Agency Jakarta Representative was delivered to DIC III in 1983/84 is as follows:

- ¥ 2.500.000,- available for 10 cubic meters water reservoir construction
- ¥ 1.000.000,- available for scientific books
- ¥ 4.000.000,- available for equipment, chemicals and biologic reagents.

## G. FACILITIES

Foreign aid (ATA - 133):		National budget:	
1. Laboratory building (m <sup>2</sup> )	630,78	1. Gen.affairs building (m <sup>2</sup> )	90
2. Dissection room, clinic and animal shed (square m)	75,00	2. Training hall (square m)	160
3. Pump room (square m)	13,81	3. Staff houses (pos)	11
4. Garage (square m)	54,00	4. Garage (square m)	38,50
5. Vehicles (pos)	6	5. Cattle houses (squ.m)	30,00
6. Motor cycles (pos)	5	6. Motor cycles (pos)	5
7. Generator 60 KVA (pos)	1	7. Sheep house (squ.m)	12,00
8. Scientific books (pos)	162	8. Chicken house (squ.m)	98,50
9. Laboratory equipment	various	9. Mice house (squ.m)	9,00
10. Chemicals/reagents		10. Barn (squ.m)	26,00
11. Deep well (pos)	1	11. Deep well (pos)	1
12. Water reservoir (pos)	2		

## III. PROGRESS AND ACHIEVEMENT

### A. FIELD ACTIVITIES, LABORATORY INVESTIGATION AND THE RESULTS

#### 1. Field activities:

- a. Field investigation have been conducted based on Decree of Director General Of Animal Husbandry no.557/KPFS/DJP/Dept/1980.  
See table 3, 4 and 5.
- b. Disease control methods is provided to applicants concerning with the laboratory results. Advices or recommendations are given to applicants who <sup>visit</sup> DIC for animal health informations.
- c. Guiding the provincial type laboratories: There are two B type provincial laboratories managed by Provincial Livestock Services, one located in Palembang and the other one in Bengkulu. Annually we served these laboratories at least two times, also when we were going on a special visit to both area.
- d. Animal health training for veterinarians and veterinary assistance have been carried out as shown in the following table.

Type of training:	1979/80	1980/81	1981/82	1982/83	1983/84
A (vet. assistance)	10	10	15	15	15
B (veterinarians)	5	0	0	0	0
<b>Total number:</b>	<b>15</b>	<b>10</b>	<b>15</b>	<b>15</b>	<b>15</b>

#### 2. Laboratory investigation:

- a. Animal disease diagnosis can be conducted in field (clinically or pathologically) and in laboratory. See table 3, 4 and 5, and the results in table 6.
- b. Animal disease map have been presented in 1982/83 and 1983/84. The map will be issued annually.

- c. Veterinary Public Health Activities have been carried out in a limited condition. The collection of animal organs and blood were done from a slaughter house managed by Livestock Services of Bandar Lampung. Quality test for fresh milk came from dairy milk cows managed by Provincial Livestock Services of Lampung have been conducted. Zoonotic disease especially rabies have been done regularly.
- d. Limited researches have been carried out especially if we found an outstanding cases and seriously urgent. We did some experiments in the laboratory to record clinical symptoms artificially such as from Rama Dewa disease, Malignant Catarrhal Fever, Clopistat poisoning and cyanides poisoning.
- e. Repeat test on the potency of released ND vaccines and evaluation on the results of post ND vaccination have been carried out, see the following results below:

Results available from repeat test on ND vaccines

Province of:	Vaccines strain:	1982/1983			1983/1984			vaccines origin:
		Number of batches	Opt. std.	%	Number of batches:	Opt. Std.	%	
Lampung	K	3	3	100	9	7	77,8	} Provincial Livestock Services Bandar Lampung
	F	1	0	0	12	9	75	
	Sotasex	3	3	100	1	1	100	
	Pestos	0	0	0	2	1	50	
	Lasota	0	0	0	2	1	50	
Sumatra Selatan	K	2	1	50	2	2	100	} Provincial Livestock Services
	F	0	0	0	2	2	100	
	Sotasex	0	0	0	2	0	0	
	Pestos	0	0	0	4	3	75	
Tangerang West Java	Sotasex	0	0	0	2	2	100	} District Livestock Services
	Pestos	0	0	0	2	2	100	
	Lasota	0	0	0	1	0	0	
Jakarta Metropolitan	K	1	0	0	0	0	0	} Provincial Livestock Services
	F	1	1	100	0	0	0	
	Sotasex	0	0	0	1	1	100	
	Lasota	0	0	0	1	1	100	
	Pestos	0	0	0	3	3	100	
	Lasovac	0	0	0	2	2	100	
	Hervax	0	0	0	1	1	100	

If the result of each repeated test ND vaccines equal to Optimal Standard (Opt.Std.), we stated that the quality of the vaccines is still valid and good according to the requirement. Optimal standard requirement for ND vaccines is as follows:

- |               |                     |           |          |
|---------------|---------------------|-----------|----------|
| - Komarov (K) | : $10^{5,5}$        | - Lasota  | : $10^6$ |
| - F           | : $10^{6,5} - 10^7$ | - Delvax  | : $10^6$ |
| - Sotasex     | : $10^6$            | - Lasovac | : $10^6$ |
| - Pestos      | : $10^6$            | - Hervax  | : $10^6$ |

The standard based on Embryonic Infected Dose 50 (EID-50).

Results available from post ND vaccination

Provinces:	Percentage of protection:	
	1982/1983	1983/1984
Lampung	0 - 100 ( $\frac{1.060}{25}$ )*	0 - 100 ( $\frac{538}{10}$ )
Sumatra Selatan	20,9- 85,07 ( $\frac{1.321}{9}$ )	45 - 97,7 ( $\frac{350}{8}$ )
Bengkulu	0,7- 41,07 ( $\frac{1.752}{5}$ )	0

description: Nominator = number of chicken sera to be examined  
 Denominator = number of villages, sera origin

3. Results available from laboratory data collection

a. Flow of specimen

- 1). Applicants sent directly their specimen to DIC. Specimen submitted either from region III or other area. Total number of specimen sent by applicants within the period of 1979/80 to 1983/1984 about 45,48% (see table 5).
- 2). Active service to farmers succeeded to compell 27,04% of specimen (see table 5). Active service has been carried out most frequently in Lampung than in two other provinces, because DIC lies in Lampung and Livestock Services conducted actively Task Force Team for years long collaborated with District and Sub-district Livestock Services. They move 3 - 5 days in a week.
- 3). Investigation: From this activities covering serological survey and surveillance succeeded to collect 27,48% of specimen, consist of 24 kinds of materials.(see table 3)

The number of collected specimen were varied, e.g.: Sera 29,50%, blood smears 21,21%, test paper sera 14,05%, cotton swab 14,05% and faeces 12,38%.

In table 4 is indicated 10 species of animals and ather kind of animals from which specimen were collected and examined . From these animal there are two distinguished in number, chicken about 68,8% and cattle about 24,33%. There were a lot of specimen collected from indigenous and strain bred chicken than ducks.

There are a lot of government and private slaughter houses in the region, but investigation have been carried out only limited in the municipality of Bandar Lampung.

Number of specimen collected were increased during five years of DIC III activities. Perhaps this center has been settled and recognized among the people in the region, even they provided a good responsibility and understanding to the existance of DIC. Table 3, 4 and 5 do not describe the intensity or tremendous disaster of cases or even serious wide spread of a carrier in the region. Table 6 is the output available from the previous tables.



b. Description available from animal examinations

Specimen indicated in table 3 may originally derive from:

- 1). Healthy animals
- 2). Ill-health animals
- 3). Dead animals which were:
  - directly died with clinical symptoms recognized or not
  - naturally died after suffering from disease with clinical symptoms recognized or not
  - killed by compulsory before died, caused of economic reason or suffering of bad prognosis
  - autolysis quickly after a few hours dead or the dead have been buried for several days.

The results available from table 3 is presented in table 6. Off this table 6 we may have the illustration of a disease map of the region and also be able to support the policy maker of Livestock Services to plan a disease control program, to act quickly to animal disease accidents or outbreak, a serological survey, surveillance epidemiology and veterinary economy survey.

B. THE IMPACT OF THE EXISTENCE OF DIC III

Actually the existence of DIC III in the region in the Third Five Years Development Plan come in due time. Diseases could not be disappeared in the world. Disease Investigation Center has an important role and responsibility to stabilize animal health measures in the region. Therefore DIC may support animal development program, the perspective and the prospective of the increasing population of the animals and welfare of the people in the region.

1. The impact of DIC III to other disciplines

- a. Livestock Services in the region accepted without reserve the existence of DIC III as a brotherhood.
- b. Livestock Services may have profit from DIC III output.
- c. Subdistricts Public Health Services or physicians are able to secure quickly beaten rabid animal victims.
- d. Applicants are able to recognized as early as possible exact diagnosis of their sicked animals.
- e. Livestock Services are able to have additional animal health science and laboratory skill for their field animal health officers through training.
- f. Livestock Services is a good partner and as a bridge from which DIC III is able to recognize the region territory thoroughly, the different ethnic of races and the farmers community.

2. The impact from outside disciplines to DIC III

- a. There are three principles of philosophy to be conducted: frankly,

cooperative and friendly to adopt and to collaborate with other disciplines in the region.

- b. DIC III has a great convenience of her roles and responsibility in the midst of animal development program in the region.
- c. In a relatively limits of time DIC III has utmost valuable experience and is able to recognize well the territory of the region which have been developed by Livestock Services.

#### C. CO-OPERATIVE WORKS

##### 1. Co-operation with other institution

Co-operative works with either government and private institutions or the communities in the region have been carried out by DIC III during five years activities, e.g.:

- a. We always have participated in annual Provincial Development Expo held by Provincial Government of Lampung.
- b. We always have participated in Army go to villages.
- c. We dispatched our veterinarians to endeavour Agricultural Extension Training Center Martapura, Sumatra Selatan, in case of government field officers training or up grading.
- d. We collaborated with Lampung Livestock Services to lecturing Senior Livestock Highschool at Gadingrejo, South Lampung.
- e. We always have participated in seminars held by Lampung Livestock Services or District Livestock Services and provided to groups of poultry farmers and cattle owners.
- f. We provided particular services to private veterinarians, farmers pet animal owners who needed some valuable information or recommendation of their business.

##### 2. Inter workers relationship

- a. The workers have good relationship to each other, highly disciplines, participation and responsibility.
- b. The workers as a member of Government Workers Corps of The Republic of Indonesia of DIC III so called Korps Pegawai Negeri Republik Indonesia (KORPRI) are able to organize their own activities in the sphere of high spirit and self convenience. They have a co-operative society for mutual benefit.
- c. The wives'workers Association of DIC III so called Dharma Wanita through their activities also introducing and popularizing the existence of DIC III. The association has good cooperation with KORPRI. Dharma Wanita DIC III also has a cooperative society, e.g. to buy and sell goods and money for their mutual benefit and welfare.

#### D. INVESTIGATIONAL RESULTS DEVELOPMENT

The results of investigation have been published into various kind of animal health forms such as follows:

1. Monthly animal health information so called "Berita Berkala" which has been issued since 1979. The consumers are the officers of Sub-district Livestock Services.
2. Velabo Bulletin or three monthly veterinary laboratory bulletin, which was firstly issued in March 1984.

Why we used a term of Velabo? The Indonesian Veterinarians should recognize the successors who have had succeeded to develop Veterinary Science which is useful and worthy for the progress of veterinary field in Indonesia. One of them is Prof. Dr. Moh. Mansyur, the late Professor in microbiology of Veterinary Faculty, University of Indonesia Bogor. During his carrier at Veterinary Laboratory in Makassar is now called Ujung Pandang before the second world war, he found out a modified staining for acid fast bacteria, so called "Velabo Staining".

3. Scientific papers presented by DIC III veterinarians:

No.	Year of issue:	Name of writers:	Topics:
1).	1981/82	Drh Sri Marfiatiningsih	: Diagnosis of IBR like disease found in Bali breed cattle in Central Lampung
2).	1981/82	Drh Sri Marfiatiningsih	: Diagnosis of Balische ziekte found in Bali breed cattle in Central Lampung
3).	1981/82	Drh Siti Chotiah	: Diagnosis of Toxoplasmosis in Swine
4).	1981/82	Drh Siti Chotiah	: Diagnosis of Stephanurus dentatus in swine
5).	1981/82	Drh Hadi Prabowo	: Diagnosis of Dictyocaulus viviparus in Brahman cross cattle
6).	1981/82	Drh Hadi Prabowo	: Report on investigation of Sarcocystis sp. in 8 head of Brahman cross cattle
7).	1981/82	Drh Sri Marfiatiningsih	: Investigation on Newcastle Disease in chicken in Lampung
8).	1981/82	Drh Sri Marfiatiningsih	: Investigation on Marek's Disease in chicken in Lampung
9).	1981/82	Drh Siti Chotiah	: Investigation on Leucocytozoonosis in chicken in Lampung
10).	1981/82	Drh I Made Swastawa	: Investigation on Hemorrhagic septicaemia in Lampung
11).	1981/82	Drh Hadi Prabowo	: Investigation on animal diseases in the area which was polluted with ash and sand came from Mount Galunggung, in West Java
12).	1981/82	Drh Hadi Prabowo	: The histopathological view of Rama Dewa disease
13).	1982/83	Drh Hadi Prabowo	: Investigation on rabies in the region of DIC III
14).	1982/83	Drh Siti Chotiah	: Investigation on Hemonchus sp. investigation in cattle, buffaloes, goat and sheep in South and Central Lampung
15).	1982/83	Drh Sri Marfiatiningsih	: Serological reaction of cattle against Akabane virus

- 16). 1982/83 Drh Hadi Prabowo et al : Toxoplasmosis in dog. An histopathological diagnosis
- 17). 1982/83 Drh I Made Swastawa : Escherichia coli infection in piglets in South Lampung
- 18). 1982/83 Drh F.X. Soesilo et al : The communities' respons of flow of specimen in the region of DIC III within Three Years of The Third Repolita
- 19). 1982/83 Drh Hadi Prabowo : Diseases and agents found in ex imported cattle from Australia which have been distributed throughout Lampung
- 20). 1982/83 Drh Sri Marfiatiningsih : Evaluation on post MD vaccination in Lampung, Sumatra Selatan and Bengkulu
- 21). 1982/83 Drh Hadi Prabowo et al : Investigation on the death of ex Tapos sheep found at three villages of Gadingrejo subdistrict in Central Lampung
- 22). 1983/84 Drh Hadi Prabowo et al : Cyanides poisoning. Histopathological study in field cases and laboratory experiment
- 23). 1983/84 Drh Hadi Prabowo et al : Histopathological study on BMD cases found in the region of DIC III
- 24). 1983/84 Drh Sayidi Aryono et al : IBR neutralization test against cattle sera collected from Lampung
- 25). 1983/84 Drh Sayidi Aryono et al : Neutralization test on rabid virus originally came from Palembang and Bandar Lampung
- 26). 1983/84 Drh I Made Swastawa et al : Investigational results available from Sodium cyanides poisoning in buffaloes and cattle originally from South Lampung
- 27). 1983/84 Drh I Made Swastawa et al : Fowl cholera outbreak in poultry in Lampung
- 28). 1983/84 Drh Darman Husin et al : Evaluation on ex imported cattle from Australia which have been distributed throughout the region of DIC III
- 29). 1983/84 Drh Siti Chotiah et al : Scabies investigation in small domestic animals found in Jabung subdistrict of Central Lampung
- 30). 1983/84 Drh Hadi Prabowo et al : Surveillance on the death of cattle owned by IPAD which have been distributed at Jayaloka subdistrict, Musi Rawas district of Sumatra Selatan
- 31). 1983/84 Drh Hadi Prabowo et al : Investigation on the mortality of buffaloes originally come from the Presidential aid which have been distributed at Muara Enim and Lahat districts of Sumatra Selatan
- 32). 1983/84 Drh Hadi Prabowo et al : Investigation on Hemorrhagic septicemi outbreak in South Lampung

#### 4. Animal disease map

Animal disease map has been issued since 1982/83 based on National statement of standardization

5. Direct public services: The results of investigation were provided to applicants who needed information or recommendation, e.g.: farmers, consultants to animal feeding manufactures, veterinarians, veterinary students, Public health Services and so on.

#### E. S E M I N A R

1. Drh Sri Marfiatiningsih attended The XII-th Regional OIE Conference for Asia, Far East and Oceania in Jakarta in 1980.
2. Drh F.X. Soesilo attended the guidance on animal communicable disease workshop in Jakarta in 1981.
3. Drh Hadi Prabowo attended Animal science research seminar held by Central Research Institute for Animal Sciences at Cisarua, Bogor in February 1982.
4. Drh F.X. Soesilo attended The first National Animal Health Meeting at Cibubur Jakarta in 1982.
5. Drh F.X. Soesilo, Drh Hadi Prabowo and Drh Siti Chotiah attended Animal Health Seminar held by Directorate General of Animal Husbandry eq. Directorate of Animal Health at Cisarua, Bogor in November 1982
6. Drh Hadi Prabowo attended Large Ruminant Seminar held by Central Research Institute for ANIMAL SCIENCE in Bogor in November 1982.
7. Drh Siti Chotiah attended Second Entomologist Association Congress in Jakarta in 1983.
8. Drh F.X. Soesilo, Drh I Made Swastawa, Drh Darman Husin and Drh Sayidi Aryono attended Animal Health Seminar held by Directorate General of Animal Husbandry eq. Directorate of Animal Health at Cisarua, Bogor in February 1984

#### F. R E F E R E N C E L I B R A R Y

Reference library is of essential for developing DIC III's duties and results of investigation. The progress and achievement of this center completely depend on the implementation of scientific books, journals and other scientific papers, besides sophisticated laboratory equipment we have had and skilful of the technicians.

The number of reference are as follows:

no.	Description:	Number of topics/materials:	Material origin:
1.	Scientific books	162	ATA-133
2.	Journals from abroad	6	National budget
3.	Bulletin	8	National budget
4.	Brochures	various	National budget
5.	News paper	2	National budget
6.	Audio visual aids:		
	- film	various	National budget
	-- Slides	206	ATA-133
		various	National budget
	-- video cassettes	47	ATA-133

#### IV. PROBLEMS AND SOLUTION

##### A. INTERNAL PROBLEMS

###### 1. Field and laboratory activities

The strategy of investigation has been carried out even in a limited condition, e.g.: investigation to slaughter houses, duck disease investigation, reproductive disorder investigation, miscellaneous small domestic animal diseases investigation, survey on veterinary economy and so on. It is as of important to support and to extend strategy of DIC III activities needs direct cooperative and collaborative works of B type laboratories in the region.

###### 2. General affairs development

a. Personnel : Until at the present time DIC III has 8 veterinarians. According to Record of Discussion, to manage and to run DIC III we must have 9 veterinarians. Since 1982/1983 we established Epidemiology section, so we need at least 11 veterinarians in total. Nowadays we realize that it is not an easy way to recruit Veterinary college post graduates becoming government officers or even laboratory technicians. To solve this problem we have officially contact to Veterinary Faculties.

###### b. Facilities

- 1). It has been planned by Local Telecommunication Agency at Bandar Lampung that telephone network in Lampung will be extended through project. So we have to wait until our registered numbers of 261 and 262 are being set up.
- 2). We have had much trouble with electric supply from government electric company, e.g. the voltage is ... not constant and electric current stopped many times.

###### 3). Laboratory equipment

###### a). Refrigerated centrifuge Model RS-1811

Made by Tomy Seiko Co Ltd. It has 3 type of rotor:

- No. 4N 50 Mlx8 tubes 15.000RPM R.33 71 108 mm
- No. 16N 1.800 M1 8.000 RPM R.26 73 120 mm
- No. 17N 500 Mlx6 tubes 7.000 RPM R.48 105 162 mm

AT The time Jica Equipment Repair and Maintenance Team visited DIC III to repair equipment in 11th to 13th April, 1983, since then rotor No. 4N could not be set down from the axle (tight fast). So we can not use the other rotors it means we have an other complain properly.

b). Speedclave Model S-90 II

Made by Tomy Seiko Co Ltd.

Since 1980 its temperature control was irregular, the range is between 120°C to 150°C. We could not set up the temperature less than 120°C.

According to Japan Repair team, spare parts will be sent in the near future.

c). Hot air sterilizer type GM-3E

Made by Hirazawa. No.6 - 1282 Volt.110 Amp.40A

The temperature may reach 150°C. Its body wire is bigger in diameter than the electrical wire supplied and set up on the wall. If this two poles come in contact the risk will appear in which the stop contact might be burn.

Also spare parts will be sent soon.

d). Autoclave type SD 30 ND

Made by Tomy Seiko Co Ltd.

This equipment was completely out of order.

e). Sakura Freezing microtome (cryostat)

Made by Sakura Fine Technical Co Ltd. Model GM-3B Volt. AC 100 Cycle 50. MFG No. ON 3909826

The individual temperature control is still constant.

Millimicrometer is not precisely running well.

B. EXTERNAL PROBLEMS

1. The infra structure of the region are extended and developed very slowly. Total area of the region about 164,461,50 square kilometers. There are many different ethnic of races, and a lot of number of different species of animal commodities. The comparison between the density of the people and the total area is so big. And the owning animals system is almost small holders.
2. We have to cooperate with subdistrict and district level Livestock Services officers, especially in the field of animal health problems. There are a lot of them not qualified for their position. On the other hand implementation of number of field officers, animal health tools and equipment, vehicles and operational budget compared the existing area is less than enough. Of course the government should improve this condition.
3. Un-qualified specimen from applicants were oftenly received. Recommendation and direction have been informed to Livestock Services.
4. There are among the traditional communities still do not aware of their animals owned. They let their animals free grazing along the

government roads, path-ways in the villagos, wandering anywhere else in the city. Even they do not take care off their animals when they are sicked or died.

5. In case of men beaten dogs (healthy or suspected rabid dogs), the re-action of the people tend to kill the animals directly with no reason. Off this action, DIC III aactually have had much complain to oarry out the management or processing of the specimen.

## V. E V A L U A T I O N

DIC region III Bandar Lampung was granted her existenece by the Japanese Government through mutual understanding with the Indonesian Government.

Evaluation for the capacity and the capability of DIC activities is quite necessary. The evaluation team consist of group experts and authorities of Japan and Indonesian authorities (Agency of National Planning and Development, Bereau of Planning -- Department of Agriculture and Directorate General of Animal Husbandry).

In the following table we illustrate the inter connection between the establishment of the Technical Cooperation Project, The duration of DIC III performance and the ovaluation.

Duration of The technical Cooperation Project:	d e s c r i p t i o n :
July 7,1977	<ul style="list-style-type: none"> <li>- The Technical Cooperation Project through Record of Disous- sion was signed by Japan and Indonesian government represen- tatives.</li> <li>- Laboratory diagnostic Medan have been developed by Japanese experts.</li> </ul>
July 8,1978	<ul style="list-style-type: none"> <li>- November 25,1978 DIC I and III were officially opened by the Ministry of Agriculture of The Republic of Indonesia.</li> <li>- December 1978, two Japanese experts commenced to work at DIC III Tanjungkarang</li> <li>- April 1,1979, actually DIC III begun to manage its own budget to activate DIC Management.</li> </ul>
July 7,1979	<ul style="list-style-type: none"> <li>- February 2 to March 3,1980 the first ovaluation was carried out.</li> </ul>
July 7,1980	<p><u>Conclusion:</u> The Technical Cooperation Project was necessary to be extent for two years and terminated in July 1982.</p>
July 7,1981	<ul style="list-style-type: none"> <li>- December 5 to 15, 1981, second evaluation was carried out.</li> </ul> <p><u>Conclusion:</u> The Technical Cooperation Project was necessary to be extended at least for two years and terminated on Yuly 1984.</p>



July 7, 1982

July 7, 1983 - July 22 to 29, 1983, third evaluation was carried out.

Conclusion: The progress and achievement of The Technical Cooperation Project in the frame of Animal Health Improvement Program has been completely accredited and satisfied. Final target of the project will be accomplished.

July 6, 1984 - The termination of the project.

Historically Laboratory diagnostic Medan was first developed before appointed out as Disease Investigation Center Region I Medan. About one and half years later both DIC I and III were established.

Actually the difference in duration of transferring expertise and technology is not really significant. Let us see the following example of the evaluation:  
see

Activities of both centers:	Medan:	Tanjungkarang:	
Diagnosis	80%	75%	This item is recorded from the second evaluation hold in December 5 to 15, 1981.
Field survey	90%	85%	
Training	75%	75%	
Assisting disease control	60%	75%	
Vaccine trial	10%	0	
Technical transfer:			<u>Topic:</u>
Pathology section	80%	90%	Achievement of Animal
Virology section	80%	70%	Health Project.
Bacteriology section	90%	80%	
Parasitology section	90%	85%	

## VI. CONCLUSION

Since the Ministry of Agriculture of The Republic of Indonesia officially opened DIC I and DIC III in Medan in 25th November 1978, until the end of the Third Five Years Development Plan, DIC III has been well managed, well developed and accredited.

The progress and achievement available based on and supported by the existence of concrete hardwares and softwares. Therefore off this condition the workers have high ly dedioation, particiption, disciplines, cooperation and loyalties to serve their nation.

DIC III has been succeeded to lay down the foundation and to fill a good atmosphere<sup>of</sup> cooperation and respons to any disciplines either government and private institutions or the communities. Even to keep a good cooperation among workers themselves and experts.

Transferring of expertise and technology from the Japanese experts were able to adsorbe easily by the Indonesian counterparts, for examples:

1. Sophisticated equipment and a lot of reagents have been used and maintained efficiently and effectively.
2. Field investigation and laboratory diagnostic technics have been carried out so offioient and effectivly.
3. From the results of investigation development we have been successfully published various animal health information forms, e.g.: Monthly animal Health Information, Three monthly Bulletin, Scientific papers, diseases lists, various photoes and direct services to applicants.
4. Having the capacity and encouragement to attend either in the regional, and national or international seminars.

Livestock Services in the region realized well and have a great convenience on the roles of DIC III, because the existence of DIC completely to support the development of the region and especially in animal health improvement programmes.

In case of zoonotic diseases especially rabies, the role of DIC III to human health disciplines appeared significantly. We do have good understanding and cooperation for the welfare of the people.

Also the livestock owners society, pet animals owners society, poultryshop owners, poultry farm interprices, swine farm interprices and so on have a good respons to DIC III.

## VII. ACKNOWLEDGEMENT

We have much gratitude and highly appreciate to Japanese Government in providing valuable grant to realize the existence of DIC III Bandar Lampung. Also to Japan International Cooperation Agency with staffs and experts having been assigned to DIC III, who have carried out good cooperation and understanding, so that DIC III grew fast, developed and achievable.

It is much thankfulness and greatly appreciate to Indonesian Government with the respons to accept grant from Japanese Government, valuable for our national development especially on animal health improvement program.

We acknowledge with honest to Director General of Animal Husbandry who have succeeded to manage and to develop DIC III.

It is also much appreciate to all members Government Workers Corps of the Republic of Indonesia of DIC III and Wives' Workers Association of DIC III providing their efforts, participation and any valuable aids to support and popularize the existence of DIC III.

And finally, it is much pleasure and thankfulness to all staffs and workers who have worked very keenly with fully and highly dedication in the sphere of frankly, cooperative and friendly, spirit of collaboration and bring DIC III into full-grown state of development and advancement.

Table 3. Number of various specimen collected from animals originally came from Region III and other area from 1979/80 to 1983/84.

Kind of specimen	1979/80	1980/81	1981/82	1982/83	1983/84	Total number within 5 years.**
1. Life animals *	150	60	101	129	101	541 ( 0,38% )
2. Dead animals	23	55	142	93	179	492 ( 2,82% )
3. Organ	77	856	871	913	931	3468 ( 29,50% )
4. Sera	2352	4345	8613	15676	7060	38046 ( 3,65% )
5. Hematocrit sera	0	1585	1718	749	635	4867 ( 14,81% )
6. Test paper sera	146	311	463	5451	12734	19105 ( 0,18% )
7. Blood EDTA	0	3	117	70	53	243 ( 21,21% )
8. Blood smear	1745	3411	7330	9896	4977	27359 ( 12,38% )
9. Faeces	1288	2230	4145	5837	2741	15971 ( 0,06% )
10. Scratched skin	5	14	13	15	41	88 ( 14,05% )
11. Cotton swab	7	46	15	518	17539	18125 ( 0,005% )
12. Brain smear	1	0	6	0	0	7 ( 0,21% )
13. Brain	0	0	0	137	138	275 ( 0,003% )
14. Urine	0	0	0	5	0	5 ( 0,07% )
15. Worm	0	0	0	4	1	5 ( 0,0007% )
16. Ectoparasite	0	0	0	73	30	103 ( 0,008% )
17. Egg	0	0	0	1	0	1 ( 0,01% )
18. Mud	0	0	0	1	10	11 ( 0,16% )
19. Poultry feeding	0	0	0	10	10	20 ( 0,002% )
20. ND vaccin	0	0	0	85	123	208 ( 0,0007% )
21. P.u.s	0	0	0	2	1	3 ( 0,0007% )
22. Oedem substance	0	0	0	0	1	1 ( 0,0007% )
23. Blood	0	0	0	0	1	1 ( 0,0015% )
24. Milk	0	0	0	0	2	2 ( 100% )
<b>Total number</b>	<b>5749</b>	<b>12916</b>	<b>23534</b>	<b>59665</b>	<b>47038</b>	<b>128947</b>

\* including heads of dog.

\*\* The Third Five Years Development plan.

Table 4. Number of animals as a source of specimen originally came from Region III and other area, from 1979/80 to 1983/84.

Kind of animals	1979/80	1980/81	1981/82	1982/83	1983/84	Total number within 5 Years **
1. Poultry (01)	1957	1677	4587	13983	22244	44448 ( 68,89% )
2. Cattle ( 02 )	924	2003	4086	5421	3266	15700 ( 24,33% )
3. Buffaloes (03)	4	55	66	79	61	265 ( 0,41% )
4. Horse (04)	0	0	11	0	0	11 ( 0,017% )
5. Goats (05)	15	92	194	159	271	731 ( 1,13% )
6. Sheep (06)	0	302	619	725	15	1661 ( 2,57% )
7. Swine (07)	26	60	50	83	7	225 ( 0,34% )
8. Dogs (08)	27	31	194	187	187	626 ( 0,97% )
9. Cats (09)	1	2	7	5	8	23 ( 0,03% )
10. Monkeys (10)	0	1	3	0	4	8 ( 0,012% )
11. Miscellaneous*	18	4	15	47	23	107 ( 0,16% )
Total number	2972	4227	9832	20689	26799	64517 ( 100 % )

\* Miscellaneous : Elephant, fish, turtel, rabbit, guinea pig.

\*\* The Third Five Years Development plan.

Table 5. Number of specimen collected through three field activities from 1979/80 to 1983/84.

Province :	Specimen from applicants				Specimen from active service				Specimen from investigation					Total number within 5 Years		
	1979 1980	1980 1981	1981 1982	1982 1983	1979 1980	1980 1981	1981 1982	1982 1983	1983 1984	1979 1980	1980 1981	1981 1982	1982 1983		1983 1984	
1. Lampung	134	1222	2119	3442	2739	2926	6311	7227	11108	1739	2714	4650	11699	4025	7382	69987
2. Sumatra Selatan	16	152	664	433	1265	0	0	0	1910	0	0	474	561	705	373	6553
3. Bengkulu	4	43	190	650	1011	0	0	0	3510	0	0	14	832	159	1289	7702
4. West Java	0	0	145	118	150	0	0	0	44	27	0	50	15	0	0	549
5. Central Java	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	32
6. Jakarta Metro-politan & Animal Quarantine II	0	0	0	13553	30563	0	0	0	0	0	0	0	0	0	0	44116
7. DIC I	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8
<b>Total number</b>	<b>154</b>	<b>1417</b>	<b>3150</b>	<b>18204</b>	<b>35728</b>	<b>2926</b>	<b>6311</b>	<b>7227</b>	<b>16572</b>	<b>17665</b>	<b>2714</b>	<b>5188</b>	<b>13107</b>	<b>4889</b>	<b>9544</b>	<b>128947</b>
				<b>58633 ( 45,48% )</b>			<b>34852 ( 27,04% )</b>					<b>35442 ( 27,48% )</b>				<b>( 100% )</b>

Recapitulation :		Year of activity	Number of specimen *	Animals **	Applicants ***
		1979/80	5794	2972	2657
		1980/81	12916	4227	2063
		1981/82	23334	9832	3026
		1982/83	39665	20689	4419
		1983/84	47038	26799	2654
		<b>Total number within 5 years</b>	<b>128947</b>	<b>64517</b>	<b>14829</b>

\* Recap. from table 3 and 5  
\*\* Recap from table 4  
\*\*\* Applicants see page ix.

Table 6. Results of investigation from various kind of animals in the region within the Third Five Years Development Plan.

I. POULTRY DISEASE

Diseases :	Spesimen origin	Year of identification
<u>1. Viral</u>		
Avian Infectious (Sr)	Kedaton/L	1980
E D A '76 (Sr)	Panjang/L	1981
Fowl Pox (K,H)	Bengkulu	1981
Gumboro Disease (H)	Muara Enim/SS	1981
Lymphoid leukosis (Big liver disease) (H)	Terbanggi Besar/L	1981
Marek's disease (K,H)	Tanjungkarang/L	1981
Newcastle disease - (K)	Pringsewu/L	1979
- (K,I,Sr)	Tanjungkarang/L	1980
<u>2. Bacterial</u>		
Collibacillosis (H)	Natar/L	1982
C R D (K,H,Sr)	Kemiling/L	1980
Fowl Cholera (K.I)	Trimurejo/L (A, It)	1983
Pullorum (H,Sr)	Kodya Palembang/SS	1980
<u>3. Mycotic</u>		
Aspergillosis (I)	Tanjungkarang Barat/L	1983
Mucor sp (H)	Musi Rawas/SS	1983
<u>4. Isolated bacteria</u>		
Bacillus subtilis	Trimurejo/L	1980
Bordetella parapertusis	Kedaton/L	1980
Escherichia coli	Kedaton/L	1980
Enterobacter aerogenes	Tanjungkarang/L	1981
Shigella sp.	Kedaton	1980
Shigella sonnei	Pringsewu/L	1980
<u>5. Protozoa</u>		
Leucocytozoonosis (L.Sabrusezi) (K,M)	Kedaton	1980
Leucocytozoonosis (L.caulleryi) - (K,H)	Natar, Bandarjaya/L	1981
- (H)	Terbanggi Besar	1981
Plasmodium gallinaceum (malaria ayam) (K,M)	Kotabumi/L	1982
Plasmodium Juctranucleare (malaria ayam) (K,M)	Natar / L	1982

Rabies (K,H,M)	Tanjungkarang	1983
Rana Dowa (K,H)	Seputih Raman	1979
<u>2. B a c t e r i a l</u>		
Brucellosis (Sr)	Punggur/L	1980
Haemorrhagic septicemia (K,H,I)	Sukarame/L (S,Kb)	1981
Salmonellosis (I)	Trimurejo/L (Kb)	1983
<u>3. Isolated bacteria</u>		
Bordetella parapertusis	Punggur	1980
Coryne bacterium pyogenes	Talang Padang/L	1981
Flavobacterium	Punggur	1980
Moraxella lacunata	Punggur	1982
Pseudomonas aerogenosa	Talang Padang	1981
Pasteurella haemolytica	Tulang Bawang Udik/L	1980
Pasteurella multocida	Tanjungkarang	1981
Salmonella typhimurium	Terbanggi Besar	1981
Staphylococcus pyogenes	Gedong Tataan/L	1980
Shigella sp	Tanjungkarang	1981
<u>4. P r o t o z o a</u>		
Anaplasmosis (A.marginale) ( M )	Way Jepara/L	1979
Babesiosis (H)	Palembang (S,Kb)	1982
Coccidiosis (K,M)	Terbanggi Besar/L	1980
Piroplasmosis (Babesia sp) (K,M)	Way Jepara	1979
Sarcocystic sp (H)	Way Jepara	1981
Trypanosomiasis (Surra) ( K,M)	Bangunrejo/L	1979
Theileria sp (M)	Jatibaru/L (S,Kb)	1979
<u>5. E n d o p a r a s i t e</u>		
Ascariasis (K,M)	Gedong Tataan	1981
Dyctiocaulosis (H)	Way Jepara	1981
Fasciolasis (K,M)	Sekampung/L (S,Kb)	1980
Haemonchosis (K,M)	Gedong Tataan	1981
<u>6. E x t o p a r a s i t e</u>		
Demodocosis (K,M)	Kec.Purbolinggo/L	1981
<u>7. Identified worm</u>		
<u>A. Trematoda</u>		
Eurythrema pancreaticum	Natar (S,Kb)	1982
Fasciola hepatica	Pringsewu	1979



Trypanosoma sp.	Terbanggi Besar/L	1981
Coccidiosis (K,M)	Tanjungkarang	1979
<u>6. Endoparasite</u>		
Ascariasis (M)	Telukbetung Utara/L	1980
<u>7. Identified worms</u>		
<u>A. Cestoda</u>		
Railletina sp	Kedaton	1982
<u>B. Nematoda</u>		
Ascaridia galli	Tanjungkarang Barat	1979
Capillaria sp	Kedaton	1980
Keterakis gallinae	Tanjungkarang Timur	1980
<u>8. Arthropoda</u>		
<u>A. Lalat</u>		
Culicoides sp (M)	Natar	1981
Simulium sp (M)	Terbanggi Besar	1981
<u>9. Poisonous cases</u>		
Clopiostat (D)	Natar	1982
<u>10. Defficiency</u>		
Calcium Defficiency (D)	Pringsewu/L	1982
<u>11. Pathological findings</u>		
Adenocarcinoma (H)	Pringsewu	1982
Toxic liver cirrhosis (H)	Raman Utara	1981
Visceral Cout (H)	Kedaton	1983
Peritonitis (H)	Natar	1981
Infectious Bronchitis (K,H)	Tanjungkarang	1981
Salfingitis (H)	Tanjungkarang	1981
Hemorrhagic Diathesis (H)	Tanjungkarang	1982

## II. CATTLE AND BUFFALOES DISEASES

<u>1. Viral</u>		
Akabane (Sr)	Palembang	1981
Blue tongue (Sr)	Seputih Raman/L	1982 *)
B M C F (K,I)	Punggur/L (S,Kb)	1982
I B R (K,H)	Talang Padang/L	1982
Japanese Encephalitis (Sr)	Kalianda/L	1981
Para Influenza type III (Sr)	Panjang (Karantina)	1980

\*) Monthly Animal Health Information No. 40 - IV - 1984.

Gastrothylax sp	Punggur	1979
Paramphistomum sp	Kalianda	1979
<b>B. <u>Nematoda</u></b>		
Ascaris Vitulorum	Punggur	1980
Bunostomum sp	Pringsewu (S,Kb)	1979
Cooperia punctata	Punggur (S,Kb)	1979
Haemonchus contortus	Panjang (S,Kb)	1980
Mecisticirus	Panjang	1980
Nematodirus sp	N a t a r (S,Kb)	1981
Ostertagia sp	Gedong Tataan	1983
Oesophagostomum sp	Pringsewu (S,Kb)	1979
Strongylus sp	Terbanggi Besar	1979
Syngamus laryngeus	Tulangbawang Tengah/L	1980
Trichostrongilus axei	Tulangbawang Tengah	1979
Trichuris sp	Punggur	1979
<b>8. <u>Arthropodes</u></b>		
<b>A. <u>Caplak</u> (ticks)</b>		
Boophilus microplus	Natar (S,Kb)	1981
<b>B. <u>Tungau</u> (Mites)</b>		
Demodex bovis	Purbolinggo (S,Kb)	1981
<b>C. <u>Lalat</u> (Flies)</b>		
Chrysops sp	Tugumulyo, MURA/SS	1982
Musca sp	Belitung, OKU/SS	1982
Tabanus sp	Bangunrejo/L	1982
Stomoxys sp		1979
Hippobosca equina Leach	Banjid/L	1983
	MURA/SS	1983
<b>9. <u>Poisonous cases</u></b>		
Keracunan residu pestisida (D)	Abung Timur/L	1982
Keracunan cyanida (K)	P a l a n g / L (S,Eb)	1983
Keracunan Lamtana camara	Punggur	1982
<b>10. <u>Pathological findings</u></b>		
Anaemia (K)	Karantina, Panjang	1981
Adenoma (H)	Kotanegara, Sumsel	1982
Abscess (H)	Gedong Tataan	1981
Atelectasis (H)	Palembang	1981
Broncho pneumonia (H)	Lubuklinggau	1980
Heart Fatty degeneration (H)	Karantina Panjang	1981

Enteritis Catarrhalis (H)	Talang Padang	1981
Enteritis Hemorrhagica (H)	Way Jepara	1981
Glomerulo Nephritis (H)	Musi Rawas/SS	1982
Gastro Enteritis (H)	Seputih Raman	1980
Hyperkeratosis (H)	Bengkulu	1982
I B R (H) Buffalo	Mečan	1982
Lung Worm Disease (H)	Way Jepara	1981
Myocitis necrotican (H)	Punggur	1980
Malnutrition (K,H)	Karantina, Panjang	1981
Liver necrosis (H)	Tulangbawang	1981
Oedema Pulmonum (H)	N a t a r	1981
Pneumonia (H)	Abung Selatan	1981
Pyometra	MURA/SS	1982
Pleuritis Pericarditis (H)	N a t a r	1982
Pneumonia Necrotican (H)	Talang Padang	1981
Papillomatosis (K,H)	N a t a r	1981
Heart Thrombosis (H)	Gadingrejo	1981
Toxic Liver distrophy (H)	Terbanggi Besar	1982

### III. GOAT AND SHEEP DISEASES

1. <u>Viral</u>		
Orf (K)	Terbanggi Besar	1980
Rabies (H,M)	Muara Enim/SS	1981
2. <u>Isolated bacteria</u>		
Eordetella bronchiseptica	Terbanggi Besar	1981
Escherichia coli	Terbanggi Besar	1980
Klebsiella ozainae	Terbanggi Besar	1980
Pseudomonas	N a t a r	1980
3. <u>Endoparasite</u>		
Haemonchiasis (M)	Terbanggi Besar (Db)	1980
Fasciolosis	(Kg, Db)	1979
4. <u>Extoparasite</u>		
Scabies (K,M)	Terbanggi Besar	1980
5. <u>Identified worms</u>		
Haemonchus sp	Kedaton (Kg,Db)	1979
Oesophagostomum sp	Terbanggi Besar	1980
Trychostrongylus sp	Sumber Jaya/L	1980
Trichuris sp	Terbanggi Besar	1980

6. Arthropodes

A. Mites

Sarcoptes scabiei Kedaton 1981

7. Pathological findings

Blue tongue like (K,H) Bogor 1981

Broncho Pneumonia (H) Natar 1981

Cachexia (K,H) Karantina Panjang 1981

Hyperkeratosis (K,H) Bengkulu 1982

Peritonitis acuta (H) Tanjungkarang 1981

Pyometra (H) Karantina Panjang 1981

Eimeria sp

Temik poisoning Muara Enim 1982

IV. SWINE DISEASES

1. Viral

Japanese Encephalitis (sr) Kalianda 1980

2. Bacterial

Colibacillosis (I) Ketibung/L 1982

Septicemia hemorrhagica (K,I,H) Padang Ratu 1981

3. Isolated bacteria

Bordetella parapertusis Seputih Raman 1980

Escherichia coli Gedong Tataan 1981

Klebsiella aerogenes Seputih Raman 1980

Pseudomonas sp Gedong Tataan 1981

Shigella sp Seputih Raman 1981

4. Endoparasite

Ascariasis (M) Seputih Raman 1980

Stephanurus (K,M,H) Seputih Raman 1980

5. Identified worms

A. Nematoda

Ascaris Suum Pringsewu 1980

Stephanurus dentatus Seputih Raman 1980

Necator sp Talang Kelapa, MUBA 1980

6. Pathological findings

Ascariasis (H) Seputih Mataram 1981

Peritonitis, Pleuritis  
Srofibrinosa (K,H) Seputih Mataram 1981

V. DOGS AND CATS DISEASES

1. <u>V i r a l</u>		
Dog Distemper (K,H)	Tanjungkarang	1981
Rabies (K,M,I)	Bengkulu (Aj)	1979
	Kedaton (Aj)	1980
Parvo virus infectious (K,H)	Telukbetung	1983
2. <u>I s o l a t e d b a c t e r i a</u>		
Leptospira sp	Tanjungkarang (Aj)	1982
3. <u>P r o t o z o a</u>		
Toxoplasmosis (K,H)	Kedaton (Aj)	1982
Trypanosoma (M)	Tanjungkarang (Aj)	1981
4. <u>E n d o p a r a s i t e</u>		
Ancylostoma sp	Kedaton	1979
Diphylidium caninum	Kedaton	1982
Toxocara canis	Telukbetung Selatan	1979
Trichuris pulvis	Telukbetung Selatan	1979
5. <u>E x t o p a r a s i t e</u>		
Demodex (K,M)	Tanjungkarang	1982
6. <u>I d e n t i f i e d w o r m s</u>		
A. <u>N e m a t o d a</u>		
Ancylostoma caninum	Tanjungkarang Barat	1980
7. <u>P a t h o l o g i c a l f i n d i n g s</u>		
Gastro enteritis catarrhalis (H) N a t a r		1982

D E S C R I P T I O N

K - Clinically	L - Lampung
KA - Chemical Analysis	SS - Sumatra Selatan
H - Histopathologically	A - C h i c k e n
Sr - Serologically	It - D u c k
I - Isolation	S - Cattle
M - Microscopically	Kb - Buffaloes
Ma - Macroscopically	Kg - G o a t
D - Suspected	Db - S h e e p
	Aj - D o g s





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