(9)

ADV HQ SEATIC
SINGAPORE

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TRANSLATION OF A DOCUMENT PREPARED
BY Col ARIMA (see report 1935/55)
ON 16 FIELD AIR REPAIR DEPOT.

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1. WORKING PERSONNEL IN WORKSHOPS.

	OFFICERS	NCOs	ORs	CIVILIAN TOTAL ATTACHED	LOCAL PERSONNEL MEN	WOMEN	TOTAL
Workshop Affairs	1	2	7	1 11	5	1	6
Air Frame Workshop	3	9	82	4 98	67	5	72
Aircraft-engine Repair-shop	1	6	48	4 59	56	27	83
Running Test Workshop	1	5	50	6 62	40	2	42
Propeller Repair-shop	1	0	10	2 23	23	0	23
Metal Plate & Wooden parts workshop	2	4	35	6 47	65	6	71
Electric parts & meter workshop	1	10	30	6 47	50	15	65
Hydraulic & Pump Repair shop	1	1	8	1 11	13	0	13
Spare parts workshop	1	15	137	19 172	75	0	75
Oxygen works	1	0	9	0 10	8	0	8
Forging workshop	1	2	6	1 10	3	0	3
Foundry	1	2	7	1 11	3	0	3

2. MACHINES IN WORKSHOPS AND WORKS.

a) Air Frame Workshop.

(i) Machines:

Air-compressor : 1
Grinder : 1
Sewing Machines : 3
Lathe : 1
Sewing Machine for leather : 1

(ii) Number of Aircraft repaired monthly

Heavy Aircraft - Regular maintenance repairs 2
- Irregular maintenance repairs 10
Light Aircraft - Regular maintenance repairs 5
- Irregular maintenance repairs 60
Repair of Parachutes 90

(iii) Kind and range of repair

1. The exchange of new or repaired parts for damaged parts.
2. Repair of damaged parts.
3. When the main beams are not bent severely, fuselage and main wings may be repaired.
4. Exchange of cloth on AILERONS
5. Painting of body and wings.

b) Aircraft Engine Works.

(i) Kind and range of repair

1. Stripping
2. Washing
3. Repair
4. Exchange of damaged parts.
5. Exchange of bearing metal.
6. Tightening valves.
7. Running test of engine lasting about 5 hours.
8. Aircraft engines are tested on the testing table.
9. Carburetter is tested for petrol and quantity of flow.

(ii) Machines

Air-compressor : 1
Valve Grinder : 1
Testing table : 7
Grinder : 1
Press Machine : 1
Boiler : 1

(Cont)

(iii) Number of aircraft engines repaired monthly

Regular	30
Irregular	15

c) Maintenance Workshop.

(i) Kind and range of repair

1. Removal and installing of aircraft-engines.
2. Running test of aircraft engines and adjustment after fittings.
3. Flying test.
4. Maintenance of aircraft using Depot.
5. Exchange of various auxiliary parts.
6. Adjustment of valve clearance etc.
7. Running test on the ground.
8. For heavy damage, the help of other workshops is required.

(ii) Number of aircraft fitted with aero-engines monthly

Heavy aircraft	10
Light aircraft	50

d) Propeller workshop.

(i) Kind and range of repair

1. Adjustment of propellers for heat and cold.
2. Stripping, cleaning and repairing adjustment.
3. Exchange of parts.
4. Painting of propeller blade.
5. Repair of governors.
6. Repair of bent propellers is possible to the extent of 60° of curvature when hot.
7. Balance test of fitted propellers.
8. Adjustment of pitch angle.
9. In ratio type propeller the control of pitch angle is tested.
10. Repair of damage caused by enemy fire is carried out only when the damage is confined to the outer covering.
11. Wooden propellers are repaired at the wooden part workshop.

(ii) Machines

Bending correctors (oil pressure)	2
Governor tester	1

(iii) Number of propellers and Governors repaired monthly

Propellers	- Regular	15
	- Irregular	20
Governors		30

e) Eletric parts and meters workshop.

(i) Kind and range of repair

1. Stripping, cleaning, exchanging of parts, adjustment, and testing of all electric machines.
2. Stripping, cleaning and testing of plugs.
3. Charging and repairing of batteries.
4. Stripping, cleaning, testing, and repairing and adjustment of all meters.
5. Repair of high tension electric wires.
6. Removal of corroded portion, exchange of parts and adjustment for various optical instruments.

(ii) Machines

Magnetic Generator Tester	1
Aircraft Generator Testers	2
Inertia Starter Tester	1
Magnetizer	1
Table Lathes	2
Boring Machines	2

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		Grinders	2
		Plug Grinders	15
		D. C. Generators	3
		Air-compressors	2
		Meter Testers	10
		Optical Instrument Tester	1
(iii)	Number of instruments repaired monthly	Electric Instruments	1,000
		Plugs	10,000
		Charging of Batteries	700
		Meters	800
		Optical Instruments	60
		High Tension Wire	100

f) Metal Plates and Wooden Parts Workshop.

(i) Kind and range of Repair

1. Manufacture and repair of metal plate parts.
2. Manufacture and repair of rudders, elevators, ailerons etc.
3. Repair of wooden parts.
4. Repair of wooden propellors.
5. Manufacture of parts which are to be renewed.

(ii) Machines	Lathes	2
	Grinders	2
	Boring Machines	2
	Cutting Shears	2
	Bending Machines	3
	Squeezing Machines	2
	Cutting-out Machines	2
	Press Machines	1
	Air-compressors	2
(iii) Number of parts repaired monthly	Metal plates and wooden parts	600
	Repair of wooden propellers	5
	Repair of various ailerons	10

g) Hydraulic and pumps workshop.

(i) Kind and range of works

1. Repair and test for all kinds of Oleo (landing carriage), oil pumps, petrol pumps, vacuum pumps, etc.
2. Test for leakage, tightness of instruments under pressure.
3. When sliding parts are bent or there are breakages, large instruments are not repaired in this works.

(ii) Machines	Lathe	1
	Petrol Pump Tester	1
	Oil Pump Testers	2
	Suction Pump Testers	2
	Oxygen-inhaler Tester	1
(iii) Number of parts repaired monthly	Oleos	90
	Other parts	400

h) Parts workshop.

(i) Kind and range of work

1. Manufacture of parts for airframe and aircraft engine.
2. Manufacture of various instruments.

(Cont.)

(ii)	Machines	Lathes		80
		Boring Machines		6
		Milling Machines		6
		Shapers		6
		Grinder		3
		Slotters		1
(iii)	Number of parts made or repaired monthly	Aircraft Parts	made	8,000
			repaired	400
		Instruments	made	160
			repaired	140

i) Oxygen works

(i)	Kind and range of work	Manufacture of oxygen and nitrogen.
(ii)	Machines	100 horse power oxygen manufacturing machine
(iii)	Oxygen and Nitrogen made monthly	Oxygen 3,000 cylinders Nitrogen 100 "

Each cylinder contains 40 liters under 150 Atm. Pressure.

j) Forging works

j) (i)	Kind and range of works	1. Forging and heat treatment of aircraft parts. 2. Heat treatment of various metal materials. 3. Carburizing of steel parts and bars.
(ii)	Number of products forged monthly	Products manufactured 254 Products repaired 60 Heat treatment 2,200 lbs forged by $\frac{1}{2}$ ton hammer.

k) Foundry

(i)	Kind and range of works	1. Casting of aircraft parts. 2. Casting of instruments
(ii)	Number of products casted monthly	Products 340

3. PERIOD REQUIRED FOR THE REPAIR OF AIRCRAFT AND ENGINES.

KIND OF AIRCRAFT	REGULAR MAINTENANCE REPAIR Days	IRREGULAR REPAIR AVERAGE Days	WORKING SQUAD Japanese	Local P.
Fighter Model "I" (OSCAR, 1, 2, 3) Type 1.2.3.	45	12	2	3
Fighter Model "2" (TOJO 1 (TOJO 2) Type 1.2. Ki-44	45	11	2	3
Fighter Model "2" (NICK 1) Ki-45	60	14	2	3
Fighter Model "3" (TONY 1) Type 1.2.3. Ki-61	45	12	2	3
Fighter Model "4" (FRANK 1) Type 1.2. Ki-84	45	13	2	3

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KIND OF AIRCRAFT	REGULAR MAINTENANCE REPAIR Days	IRREGULAR REPAIR AVERAGE Days	WORKING SQUAD Japanese	WORKING SQUAD Local P.
Recce Model "98" (IDA 1)	33	9	2	3
Recce Model "99" (SONIA 1)	46	9	2	3
Recce Model "100"(DINAH 1, 2, 3)	60	16	2	3
Light Bomber M "97" (SALLY)	49	13	2	3
Light Bomber Model "99" (LILY)	59	21	2	3
Bomber Model "97" Type 2 (SALLY 2)	89	33	3	3
Bomber Model "100" (HELEN)	89	33	3	3
Bomber Model "4" (PEGGY)	unknown	35	3	3
Transporter Model "97" (THORA)	61	15	3	3
M.C. Ki-57 (TOPSY)	87	30	3	3
Transport aircraft Model "I" A.T. (THERESA)	91	32	3	3
Trainer Model "99"	31	9	2	3
Trainer Model "I"	80	24	3	3
Trainer Model "2"	24	12	3	3

KIND OF ENGINES	REGULAR MAINTENANCE REPAIR Days	IRREGULAR REPAIR AVERAGE Days	WORKING SQUAD Japanese	WORKING SQUAD Local P.
Model "97" 650 HP	12	10	2 - 3	3 - 4
Model "98" 450 HP	7	7	"	"
Model "98" 850 HP	12	10	"	"
Model "99" 900 HP	12	10	"	"
Model "99" 950 HP	12	10	"	"
Model "100" 1050 HP	11	9	"	"
Model "100" 1450 HP	14	12	"	"
Model "I" 1100 HP	unknown	unknown	"	"
Model "2" 1150 HP	13	11	"	"
Model "2" 1450 HP	15	13	"	"
Model "2" 1250 HP	14	13	"	"
Model "4" 1850 HP	15	13	"	"

Remarks: 1. Working ability of local people is 3 men to 1 Japanese soldier.
2. Actual working hours per day is 7 hours.
3. Regular maintenance is carried out regularly, irrespective of whether there is trouble or no trouble.
4. Irregular repairs are made when sudden faults occur.

4. LIST OF OFFICERS WORKING AT THE REPAIR SHOPS

Name	Rank	Duty	Education	Service Years as Aero-Technician Year	Month
HASHIMOTO, Kikutaro	Maj	A.D Repair-shops	Military College	12	3
OTSUBO, Masanori	Engr Capt	OC Repair shops	University, Engr	3	5
MURAKAMI, Motoo	Engr Capt	OC Airframe Workshop	Technical College Aeronautical Dept	3	5
SANO, Hideo	Lt	Att. Airframe W.	Technical College	2	0
ITO, Toshio	Cadet	-do-	-do-	1	3
KAWAMURA, Kenji	Lt	OC Metal Plate W.	-do-	2	0
KUROZAWA, Jun	Engr 2 Lt	OC Maintenance W.	-do-	1	6
FUKUYA, Itsuro	Engr Lt	OC Engine W.	" Applied Chemistry	1	6
KURODA, Keiso	Cadet	OC Wooden Parts W.	Technical College	1	3
KATO, Yoshio	Engr Lt	OC Propeller W.	" Machinery Dept	2	0
TAKIMOTO, Masaaki	2 Lt	OC Ele M & Meter W.	" -do-	2	0
WATANABE, Minoru	2 Lt	OC Parts W., Foundry, Forging W.	" -do-	1	6
HAYASHI, Torao	Engr Lt	OC Oxygen W.	University Metallurgical Dept	4	0

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5. THE LIST OF TOWN WORKSHOPS USED.

a) Japanese owned.

NAME OF WORK SHOP	SITUATION	TYPE OF PRODUCTS	NO. OF PRODUCTS MONTHLY
Osaka Steel Plate Co.	Bukit Timah Rd.	Rotary Pumps	40
Shonan Iron Works	Jalan Eunos	Exhaust Pipes	420
		Tail Wheel Boss	100
Hattori Watch Shop	High Street	Oxygen Inhaler Gauge	100
		Aero-watches, Meters	60 (Repaired)
Tohyo Mining Co.	Ipoh	Tin Pipe	1,000 Metres
Yokohama Rubber Co.	Alexander Rd.	Tyres for Aircraft	100
		Various Rubber Packings	3,000
		Tail Wheels	200
Central Rubber Co.	Bukit Timah Rd.	Rubber Balloons for Meteorology	1,000
		Rubber Sheet Engine Covers	20
		Tail Wheels	100
Miki Steel Works	Lavender St.	Tail Wheels	100
		Hand Tools	1,000
Nomura Iron Works	Lavender St.	Torch Lamps	20
		Generator Tools	30
Toho Iron Works	Orchard Rd.	Bomb Hooks	30
		Bolts and Nuts	1,000
Shiroki Products Co.	Tanjong Katong Rd.	Various Leather Packings	1,000
		Dyeing of Camouflage Nets	100
		Tanning Sheep Leather	150
Nippon Leatherite Co.	Lavender St.	Sheets	200 Sq.Metres
		Various Packings	200 "
Nippon Fish Net Co.	Geylang Rd.	Camouflage Nets for aircraft	30
		-do- vehicle	10
Nippon Oil Co.	Pasir Panjang Rd.	Various Paints	3 Ton
		Helmetic	500 Kg.
Kurozaki Pottery Co.	Pasir Panjang Rd.	Fire Proof Bricks	2,000
Toyoh Rubber Co.	Geylang Rd.	Bicycle Tyres	300
Kobe Steel Works	Ipoh	Casting Mould	As needed
		Ferro-silicon	1 Ton
Shonan Iron Works	Jalan Besar	Nails	100 kg.
Matsuzakaya Co.	Raffles Place	Wooden Mould	As needed
		Wooden Parts	100 Pieces
Nippon Farm Tools Co.	Kuala Lumpur	Farm Tools	1,000
Nissin Veneer Co.	Geylang Rd.	Veneer	200 Sq.Metres

b) Local owned.

Kohjung	Jalan Besar	Jettisonable Tank Parts for	20 aircraft
[illegible]	[illegible]	Tail Wheel Parts	200
Chin Ah Soh	Jalan Besar	Pistons for Engine Generator for	10 engines
Eng Toh	Jalan Besar	Metal Parts of cover of electric wire	20
Shing Gyo Sei	Middle Rd.	Repair of vehicle	10
Fuku Gen	Victoria St.	-do-	10
Koh Fuku Shoh	Kallang Rd.	Saw Mill, wooden plate and timber	100 tons
Sho Ki	Victoria St.	Canvas Products (Streamer, Sacks)	100
Nan Yoh Printing Co.	Raffles Place	Various Printing	2,000 sheets

(Cont.)

Remarks: 1. Method of payment.

When there was something to be made by a town workshop, the sample or blue print was sent together with the voucher. Estimation and price was requested upon this. The supply of material, variety and amount, also manufacturing price, was decided. Manufactured articles were handed in as they were made and the 20th of every month was the closing date. The payment was made at the beginning of the next month.

2. Provision of materials.

The materials for arms manufactured were usually government issued, but where materials were easily obtainable, firms were self-supporting.

Main government issued materials were steel bars, duralmin, brass, metal wire, canvas, coke, oil, accelerator of sulphurization, etc.

6. TABLE OF AIRCRAFT AT THE END OF WAR (16 FIELD AIR REPAIR DEPOT).

	AIRCRAFT FOR SUPPLY			AIRCRAFT IN WORKS.			TOTAL			EQUIPPED ENGINE
	A	B	Total	A	B	Total	A	B	Total	Name
Recconnaissance Ki-36 (IDA I)	1	2	3	0	2	2	1	4	5	Model "98" 450 HP
Fighter Model "I" Ki-43 (OSCAR I)	0	1	1	0	1	1	0	2	2	Model "2" 1150 HP
Fighter Model "2" Ki-44 (TOJO I)	0	0	0	0	1	1	0	1	1	Model "2" 1450 HP
Fighter Model "2" Double Seat Ki-45 (NICK I)	0	3	3	0	1	1	0	4	4	Model "I" 1050 HP
Recconnaissance Model "100" Ki-46 Type 2 (DINAH 2)	0	0	0	0	1	1	0	1	1	Model "I" 1050 HP
Recconnaissance Ki-46 Type 3 (DINAH 3)	0	0	0	0	1	1	0	1	1	Model "4" 1250 HP
Light Bomber Type I Ki-48 (LILY I)	0	2	2	0	0	0	0	2	2	Model "99" 950 HP
Bomber Model "100" Type I Ki-49 (HELEN I)	1	0	1	0	0	0	1	0	1	Model "100" 1250 HP
Recconnaissance Model "99" Ki-51 (SONIA I)	0	1	1	0	0	0	0	1	1	Model "99" (900 HP)
Twin Engine Training Model "I" Ki-54 (HICKORY)	0	0	0	0	1	1	0	1	1	Model "98" 450 HP
Fighter Model "3" Ki-61 (TONY I)	0	1	1	0	0	0	0	1	1	Model "2" 1100 HP
Training Model "2" Ki-79 (NATE Trainer)	1	1	2	0	1	1	1	2	3	Model "98" 450 HP
Training Model "99" Ki-55 (IDA)	0	1	1	0	1	1	0	2	2	Model "98" 450 HP
Fighter Model "4" ki-84 (FRANK I)	0	1	1	0	0	0	0	1	1	Model "4" 1850 HP
Bomber Model "97" Type 2 (SALLY 2)	1	1	2	0	0	0	1	1	2	Model "100" 1450 HP
T O T A L	4	14	18	0	10	10	4	24	28	

Remarks: 1. "A" denotes Aircraft that were ready to fly.
2. "B" denotes Aircraft that would be ready to fly within 20 days.

H Watkins Capt.

Major,
Officer Commanding,
(E.A. Heaslett).

DISTRIBUTION

Main	HQ SEATIC New Delhi	26
	HQ SACSEA (for D of I)	6
	ACSEA (for CIO)	6
	Air Ministry, London (for ACAS (I))	2
	Air Ministry, London (for GCCS)	2
	HQ RAD Burma	1
	Air HQ Mala ya	1
	C in C East Indies Fleet	1
	Admiralty, London (for DNI)	2
	SO (I) Union Building Singapore	2
	HQ Malaya C ommand	1
	ATAIU, 5 BPU, RAF Calcutta	1
	ATAIU, 903 Wing Kalla ng (for S/Ldr Reason)	1
	USSBS, Washington	2
	1 & 5 MOBSEC SEATIC (by hand)	1 each
	2 MOBSEC SEATIC, c/o HQ Burma Command	1
	3 MOBSEC SEATIC, c/o HQ Malaya Comma nd	1
	4 MOBSEC SEATIC, c/o 6 Inf Bde Klüang	1
	SEATIC Det, c/o HQ ALF SIAM Bangkok	1
	SEATIC Det, c/o HQ 23 Ind Div Batavia NEISEAC	1
	SEATIC Det, c/o HQ 2 6 Ind Div Medan	1
	SEATIC Det, c/o HQ 32 Ind Inf Bde, Labuan (Borneo)	1
	SEATIC Det, c/o 6 Int Unit c/o 23 ABPO	1
	SEATIC Det, c/o HQ SACSEA Control Commission, Saigon	1
	Form 540	2
	File	1