

JAPAN INTERNATIONAL COOPERATION AGENCY
Tajikairnavigation (TAN)

The Project for Capacity Development in Air Traffic Services in the Republic of Tajikistan

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Project Completion Report

Separate Volume 1

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AIR TRAFFIC CONTROL ASSOCIATION JAPAN
ATCAJ

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TASKFORCE 1

Documents

Expert Reporting Session for O/M review

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Chief Advisor



www.tj-ats.com

Лоиҳа оид ба баланд намудани потенциал дар самти хизматрасонии ҳаракати ҳавой
Проект по повышению потенциала в сфере обслуживания воздушного движения
The Project for Capacity Development in Air Traffic Services

Sub-activities 1 – 4



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The Project for Capacity Development in Air Traffic Services

Sub-activities 1 – 4

JICA expert

To lecture a manual
To analyze a manual
To arrange a operation procedure



To report a result of analysis and recommendation



To conduct a seminar

18 ATCO

To review Operation Manual



To report result of review



To improve the manual if necessary



To advice improve the manual

Divided 3 WG
TWR WG
APP WG
ACC WG



Sample Format for analysis

Analysis of TAN's ATC Operation Procedures with respect to ICAO Annexes and PANS-ATM (Doc.4444)

Title of the Document: 14D Manual of Area Controllers


Clause/Section/ Paragraph	TAN's ATC Procedures Text	Differences/Deviations from ICAO Procedures	Note based on Japanese Practice
5.2. In the area of responsibility of the controller RC established the following Separation minimum intervals: 5.2.1.2. VFR:	a) To FL285 -300 m (1000 ft.); b) When flying below the lower tier: - 150 m (500 ft.) - at flight speeds of 300 km / h or less.; - 300 m (1000 ft.) -. Flight at speeds over 300 km / h.	Revised Sentence - 150 m (500 ft.)	Chapter 5 /Separation methods and minima / 5-2 Vertical separation

Method of Analysis


- Just read your operation manual over and over again, more carefully
- Check your present conditions (instruction, clearance, communication with pilot, coordination with another facilities etc.,)
- Is there anything to mismatch on your job?
- Is there anything problem or issue on your job?
- Do you have any trouble for work?
- Above all to analyze based on ICAO doc



Working Group

 Leader of WG

[Tower] WG

1.  Mirzoev Firuz
2. Bakhriddin Gafarov
3. Sino Sharipov
4. Ikromov Qayum
5. Sarvar Kurbonov

[Approach] WG

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2. Akbar Kayaumov
3. Karomatov Asadullo
4. Odil Adylov
5. Abdurakhmon Ergashev
6. Boev Bakhtiyor
7. Ochilboev Valijon

[ACC] WG

1.  Satybaldyev Sergey
2. Shukhrat Sayfuluev
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4. Gavkhar Dodov
5. Shamsov Khabibullo
6. Akbarzdhon Tadzhibaev
7. Shonazarov Shakhboz



Progress on Review of the Operation Manual

	Tower						
1	Mirzoev	4D		Complete	date	Complete	date
	12P	1.1~6.12			8/25		9/1
2	Sino	3K					
	15P	1.1~6.23					
3	Bakhriddin	5Q					
	16P	1.1~7.1					
4	Ikromov	5H					
	16P	1.1~6.11					



Progress on Review of the Operation Manual

Approach						
1 Payrav	6D		Complete	date	Complete	date
	1.1~2.6			8/25		9/1
2 Akbar	6D					
	3.1~4.10.2					
3 Karomatov	6D					
	5.1~6.24.3					
4 Odil	8D					
	1.1~2.6					
5 Abdurakhmon	8D					
	3.1~4.11					
6 Boev	8D					
	5.1~6.24.3					
7 Ochilboev	8H					
19P	1.1~6.24.3					



Progress on Review of the Operation Manual

ACC						
1 Sergey	14D		Complete	date	Complete	date
	1.1~1.13			8/25		9/1
2 Akbarzdhon	14D					
	2.1~2.6					
3 Shukhrat	14D					
	3.1~3.4					
4 Abdulmutolib	14D					
	4.1~4.13					
5 Gavkhar	14D					
	5.1~5.16.2					
6 Shamsov	14D					
	6.1~6.12					
7 Shonazarov	14D					
	6.13~6.24					



Document List

(General Aviation Regulation, Operation Manual)



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Law, Regulations and Operating Manuals					
Law and Regulations		Tajikistan	Documents in red Letter have completed.		
Aviation Act		1C			
Use of Air Space		2C			
Flight Rules		3C			
General Aviation Regulations - 21: Air Traffic Management		4C			
ATS Unit Manuals		Dushanbe	Khujand	Kurgan-Tube	Kulob
Flight Operation Manual	Aerodrome Information, Flight Procedures, Information on Air Traffic Services	2D	1H	1Q	1K
Aerodrome Control	Job Description of Tower Controllers	3D	4H	4Q	2K
	Manual for Tower Controllers	4D	5H	5Q, 6Q	3K
	Job Description of Subsidiary Tower Controllers	9D			
	Manual of Subsidiary Start Controllers	10D			
	Coordination with Ground Staff	1D	6H	7Q	6K
Ground Controlled Approach/ Surveillance Radar Approach	Job Description of Radar Approach Controllers	5D	7H		
	Manual of Radar Approach Controllers	6D	8H		
Approach Control	Job Description of Approach Controllers	7D			
	Manual of Approach Controllers	8D			
Area Control	Job Description of Area Controllers	13D	9H		
	Manual of Area Controllers	14D	10H		
Briefing Services	Job Description of Briefing Control Officers	11D	2H	2Q	4K
	Manual of Briefing Control Officers	12D	3H	3Q	5K



	Difference from ICAO Doc	WG activities	
4C		<Expert activities to consider OAP RT -21 and O/M> Light gun Flight Progress Strip Radar handover Speed control Lateral separation STCA MSAW	
1D	No finding		
2D	No finding		
3D	No finding		
4D	5 finding	1.4 Call Sign "Dushanbe-Tower". The Radar controller radio channels: 119.200 MHz - main; 122,100 MHz - Sub. <6D> 1.4 Call Sign "Dushanbe-Radar". The radar controller radio channels: 119.200 MHz - main; 122.100 MHz - Sub. Follow-me car operation 4.5.1 Procedures of "Tower" controller while departure 4.5.3 Procedures of "Tower" controller while arrival Landing clearance 4.5.3 Procedures of "Tower" controller while arrival	<Tower WG recommendation> To separate Local and Ground control To change landing clearance procedure To change follow-me car operation To install light gun To install airport surface radar

5D	No finding		
6D	4 findings	5.2.1. Vertical separation for VFR depend on flight speed 5.2.2. Longitudinal separation for VFR 5.2.3. Lateral separation for VFR 5.3.4. The lateral separation without the use of longitudinal or vertical separation is not applied.	
7D	No finding		
8D	4 finding	5.2.1. Vertical separation for VFR (1000ft.) 5.2.2. Longitudinal separation for VFR 5.2.3. Lateral separation for VFR 5.3.4. The lateral separation for IFR	
9D	No finding		
10D	No finding		
11D	No finding		
12D	No finding		
13D	No finding		
14D	5 findings	1.9 low intensity of air traffic 5.2.1.2 Vertical separation for VFR depend on flight speed 5.2.2.3 Longitudinal separation for VFR 5.2.3.1 Lateral separation for IFR 5.2.3.2 Lateral separation for VFR	

1H	No finding		
2H	No finding		
4H	No finding		
5H	No finding		
7H	No finding		
8H	4 findings	5.2.1. Vertical separation for VFR depend on flight speed 5.2.2. Longitudinal separation for VFR 5.2.3. Lateral separation for VFR 5.3.4. The lateral separation without the use of longitudinal or vertical separation is not applied.	
9H	No finding		
10H	5 finding	1.9 low intensity of air traffic 5.2.1.2 Vertical separation for VFR depend on flight speed 5.2.2.3 Longitudinal separation for VFR 5.2.3.1 Lateral separation for IFR 5.2.3.2 Lateral separation for VFR	

1Q	1 finding	7.6.4. to use the system of visual signals (Light Gun)	
2Q	No finding		
3Q	No finding		
4Q	No finding		
5Q	No finding		
7Q	No finding		
1K	No finding		
2K	No finding		
3K	No finding		
4K	No finding		
5K	No finding		
6K	No finding		



Landing clearance procedure

OAP RT - 21

368. Before issue of permission to production of landing the report shall be received from the controller performing airdrome control service on the runway: "The RWY is clear" (in case of separation of control offices, sectors of ATS) and the indicating panel "the runway is occupied" shall be is switched off.

4D

4.5.3 When the arrival of aircraft:

- c) Before issuing the landing clearance (or before reporting to radar controller "RWY is cleared" - while IFR) receives the report from a subsidiary tower "RWY is cleared";



Same frequency Tower and Radar

4D

1.4 Call Sign "Dushanbe-Tower". The Radar controller radio channels:

119.200 MHz - main;

122,100 MHz - Sub.

6D

1.4 Call Sign "Dushanbe-Radar". The Radar controller radio channels:

119.200 MHz - main;

122.100 MHz - Sub.



Follow-me car problem

4D

4.5.1 Procedures of “Tower” controller while departure

b) By the instructions of commercial service of airport, sending the “follow me car” to escort aircraft, informing the driver about the flight number, route of taxing and the number of TWY;

4D

4.5.3 Procedures of “Tower” controller while arrival:

d) By the instructions of commercial service of airport, sending the “follow me car” to escort aircraft, informing the driver about the flight number, route of taxing and the number of TWY;



How to calculate it?

10H & 14D

1.9. При малой интенсивности воздушного движения (менее 5 ВС в час), с разрешения РП, допускается объединение функций диспетчеров РЛК и ПК и осуществление ОВД одним диспетчером.

1.9

At low intensity of air traffic (less than 5 aircraft per hour), with permissions of the supervisor, it is allowed to combine the functions of the Radar controller and the Procedural controller and implementation of ATS by one controller.



To apply vertical separation to VFR

6D

5.2. При полетах по ПВП в УДР установлены следующие минимальные интервалы эшелонирования:

5.2.1. вертикальный – 300 метров (1000 фут.).

5.2 While VFR flights in TMA, the following minimum intervals of separation are established:

5.2.1 Vertical - 300 meters (1,000 ft.).



To apply vertical separation to VFR
depend on air speed

6D 14D
8H 10H

5.2.1.2. по ПВП:

а) до FL285 -300 м. (1000 фут.);

б) при полетах ниже нижнего эшелона:

- 150 м. (500 фут.) – при скоростях полета 300 км/ч и менее;
- 300 м. (1000 фут.) – при скоростях полета более 300 км/ч.

5.2.1.2. VFR:

A) to FL285 -300 m (1000 ft.);

B) When flying below the lower altitude:

- 150 m. (500 ft.) - at air speeds of 300 km / h or less;
- 300 m. (1000 ft.) - at air speeds of more than 300 km / h.



To apply longitudinal separation to VFR aircraft

6D 8D14D
8H 10H

5.2.2.3. по ПВП:

- а) между ВС, следующими по одному маршруту на одной высоте, или между ВС и другим материальным объектом - не менее 2 км;
- б) между ВС, следующими по пересекающимся маршрутам на одной высоте, или между ВС и другим материальным объектом в момент пересечения:
 - не менее 2 км при скоростях 300 км/ч и менее;
 - не менее 5 км – при скоростях более 300 км/ч.

5.2.2.3. VFR:

- A) between aircraft, following same route and same altitude, or between aircraft and other material object - not less than 2 km;
- B) between the aircraft following the intersecting routes at the same altitude, or between the aircraft and another material object at the time of crossing:
 - not less than 2 km at speeds of 300 km / h or less;
 - not less than 5 km - at speeds over 300 km / h.



To apply lateral separation to IFR aircraft

6D 8D14D
8H 10H

5.2.3. БОКОВОЙ:

5.2.3.1. по ППП:

– Боковое эшелонирование без использования продольного или вертикального эшелонирования не применяется.

5.2.3. Lateral:

5.2.3.1. IFR:

- Lateral separation without the use of longitudinal or vertical

Separation is not applied.



To apply longitudinal separation to VFR aircraft

6D 8D14D
8H 10H

5.2.3.2. по ПВП:

- при обгоне впереди летящего ВС на одной высоте - не менее 500 м;
- при следовании ВС на встречных курсах - не менее 2 км.

5.2.3.2. VFR:

- When passing through the altitude of the preceding aircraft- not less than 500 m;
- When following the aircraft on a collision course - at least 2 km.



Expert activities to consider OAP RT -21

Light gun
Flight Progress Strip
Radar handover
Speed control
Cross boundary
Lateral separation
STCA
MSAW



Light Gun (Visual Signal)

ICAO Annex 2

3.6.5.2 *Communication failure.* If a communication failure precludes compliance with 3.6.5.1, the aircraft shall comply with the voice communication failure procedures of Annex 10, Volume II, and with such of the following procedures as are appropriate. The aircraft shall attempt to establish communications with the appropriate air traffic control unit using all other available means. In addition, the aircraft, when forming part of the aerodrome traffic at a controlled aerodrome, shall keep a watch for such instructions as may be issued by visual signals.

ICVM (APP 1-3)

- d) procedures are established and implemented to safeguard and assist strayed or unidentified aircraft;
- e) procedures are established and implemented for air-ground radio communications failure



Light Gun (Visual Signal)

1Q

7.6.4. In the event of a failure of radio communication between the controller DPA (RP) and the person responsible for carrying out work on the runway to use the system of visual signals having the meanings indicated:

(Signal light supplied to the controller DPA -

- *green flash* - *is allowed to cross the landing site or access to the RD:*

- *red light steady on* - *STOP:*

- *red flashes* - *get off the landing pad or taxiway, and beware of the sun:*

- *white flashes* - *free maneuvering space in accordance with local regulations (if any laser gun).*



Flight Progress Strip

PANS-ATM

4.13.3 Presentation of information and data

4.13.3.1 The required flight plan and control data may be presented through the use of paper flight progress strips or electronic flight progress strips, by other electronic presentation forms or by a combination of presentation methods.

4.13.3.2 The method(s) of presenting information and data shall be in accordance with Human Factors principles. All data, including data related to individual aircraft, shall be presented in a manner minimizing the potential for misinterpretation or misunderstanding.

4.13.3.4 When flight progress strips (FPS) are used, there should be at least one individual FPS for each flight. The number of FPS for individual flights shall be sufficient to meet the requirements of the ATS unit concerned. Procedures for annotating data and provisions specifying the types of data to be entered on FPS, including the use of symbols, shall be specified by the appropriate ATS authority.

10H

5.5. The procedure for conducting procedural control chart is shown in Annex 7.3.

14D

5.5. The procedure for conducting procedural control chart is shown in Annex 7.3.



Radar Handover

PANS-ATM

8.7.4 Transfer of control

8.7.4.1 Where an ATS surveillance service is being provided, transfer of control should be effected, whenever practicable, so as to enable the uninterrupted provision of the ATS surveillance service.

8.7.4.2 Where SSR and/or ADS-B and/or MLAT is used and the display of position indications with associated labels is provided for, transfer of control of aircraft between adjacent control positions or between adjacent ATC units may be effected without prior coordination, provided that:

- a) updated flight plan information on the aircraft about to be transferred, including the discrete assigned SSR code or, with respect to Mode S and ADS-B, the aircraft identification, is provided to the accepting controller prior to transfer;
- b) the ATS surveillance system coverage provided to the accepting controller is such that the aircraft concerned is presented on the situation display before the transfer is effected and is identified on, but preferably before, receipt of the initial call;
- c) when the controllers are not physically adjacent, two-way direct speech facilities, which permit communications to be established instantaneously, are available between them at all times;

Note. — “Instantaneous” refers to communications which effectively provide for immediate access between controllers.

- d) the transfer point or points and all other conditions of application, such as direction of flight, specified levels, transfer of communication points, and especially an agreed minimum separation between aircraft, including that applicable to succeeding aircraft on the same route, about to be transferred as observed on the situation display, have been made the subject of specific instructions (for intra-unit transfer) or of a specific letter of agreement between two adjacent ATC units;
- e) the instructions or letter of agreement specify explicitly that the application of this type of transfer of control may be terminated at any time by the accepting controller, normally with an agreed advance notice;
- f) the accepting controller is informed of any level, speed or vectoring instructions given to the aircraft prior to its transfer and which modify its anticipated flight progress at the point of transfer.



Radar Handover

OAP RT -21

325. Transfer of the identification is performed by one of the following methods:

- a) by designation of display of location by means of the automated means provided that thus only one display of location is designated and there cannot be the doubt concerning correctness of the identification;
- b) by the notification on the SSR discrete code;
- c) by the notification that the aircraft which is in the action area of the "S" SSR mode is equipped with the device of the identification of aircrafts working in the "S" SSR mode;
- d) by the notification that the aircraft which is in the action area of the compatible equipment ADS-B is equipped with the ADS-B system with function of the identification of aircrafts;
- e) by designation of display of location by means of its correlation with the geographical place and the navaid which is precisely specified on both indicators of the air picture or by means of use of data on the bearing and distance from this place or means together with data on the track line of observed display of location if the route of the aircraft is not known to both bodies of ATS;
- f) where it is applicable, by specifying to change the aircraft from the transferring body of ATS the SSR code and the subsequent observation by the accepting body of ATS of this change or;
- g) by specifying to the aircraft from the transferring body of ATS to involve the mode of the transponder SSR "Identification" / to transmit the signal "Identification" and the subsequent observation by the accepting body of ATS of execution of this specifying.



Radar Handover

10H

4.11. APM ATC "Master" (Appendix 7.1.) Allows automated transfer of control between adjacent control points. In the presence of automated transfer of control functions and / or automated planning system, the amount of information specified by claims. 4.4, 4.5, of prior agreement with the adjacent points can be reduced by execution condition n. 4.8.

14D

4.11. APM ATC "Master" (Appendix 7.1.) Allows automated transfer of control between adjacent control points. In the presence of automated transfer of control functions and / or automated planning system, the amount of information specified by claims. 4.4, 4.5, of prior agreement with the adjacent points can be reduced by execution condition n. 4.8.



Speed Control

PANS-ATM

8.7.5 Speed control

Subject to conditions specified by the appropriate ATS authority, including consideration of aircraft performance limitations, a controller may, in order to facilitate sequencing or to reduce the need for vectoring, request aircraft to adjust their speed in a specified manner.

Note. — Procedures for speed control instructions are contained in Chapter 4, Section 4.6.



Speed Control

OAP RT -21

136. For safety control and efficiency of the air traffic, establishment or keeping of safe intervals of separation crews of aircrafts can be instructed definitely to correct flying speed.

137. For establishment of the desirable interval between two or several following one after another aircrafts to the controller it is necessary first of all or to reduce the speed of the following behind the aircraft, or to increase the speed of the following ahead of the aircraft, and then to correct in need of the speed of other aircrafts.

138. Management of horizontal speed is not applied to the aircrafts entering or being in the waiting area.



Speed Control

10H

5.15. To ensure the separation set, the dispatcher uses the RC methods of regulating the longitudinal and vertical flight speeds the AC, taking into account their of performance.

5.15.1. horizontal speed control does not apply to aircraft entering or staying in the waiting area.

5.15.2. At FL250 and higher speed adjustment is expressed in multiples of values 0.01 Mach and below FL250 airspeed values that are multiples of 20km / h (10Knots).

5.15.3. At the initial stage of the decline from cruising level for turbojet Aircraft speed decrease to a value less than 460 km / h (250 knots) with no agreement with the crew is not assigned.

14D

5.10. To ensure the separation set, the dispatcher uses the RC methods of regulating the longitudinal and vertical flight speeds the AC, taking into account their of performance.

5.10.1. horizontal speed control does not apply to aircraft entering or staying in the waiting area.

5.10.2. At FL250 and higher speed adjustment is expressed in multiples of values 0.01 Mach and below FL250 airspeed values that are multiples of 20km / h (10Knots).

5.10.3. At the initial stage of the decline from cruising level for turbojet Aircraft speed decrease to a value less than 460 km / h (250 knots) with no agreement with the crew is not assigned.



Lateral Separation

PANS-ATM

5.4.1 Lateral separation

5.4.1.1 LATERAL SEPARATION APPLICATION

5.4.1.1.1 Lateral separation shall be applied so that the distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer. This buffer shall be determined by the appropriate authority and included in the lateral separation minima as an integral part thereof.

Note. — In the minima specified in 5.4.1.2 an appropriate buffer has already been included.

5.4.1.1.2 Lateral separation of aircraft is obtained by requiring operation on different routes or in different geographical locations as determined by visual observation, by the use of navigation aids or by the use of area navigation (RNAV) equipment.

5.4.1.1.3 When information is received indicating navigation equipment failure or deterioration below the navigation performance requirements, ATC shall then, as required, apply alternative separation methods or minima.



Lateral Separation

OAP RT -21

- Separation - vertical, longitudinal or lateral of aircrafts in airspace on the established intervals.

170. The body of ATS takes measures for preserving the established vertical regulations of separation between aircrafts in case of the variable profile of flight in case of lack of longitudinal and/or lateral separation.

175. The body of ATS provides aircraft separation by application of the specific method of separation (vertical, longitudinal or lateral separation) or by application of the combined separation representing the combination of vertical separation and longitudinal separation due to use of the corresponding minima of separation which can be lower, but no more than half than the minima of separation used for each of total elements in case of their separate application.



Short-term conflict alert (STCA)

PANS-ATM

15.7.2 Short-term conflict alert (STCA) procedures

Note 1.— The generation of short-term conflict alerts is a function based on surveillance data, integrated into an ATC system. The objective of the STCA function is to assist the controller in preventing collision between aircraft by generating, in a timely manner, an alert of a potential or actual infringement of separation minima.

Note 2. — In the STCA function the current and predicted three-dimensional positions of aircraft with pressure-altitude reporting capability are monitored for proximity. If the distance between the three-dimensional positions of two aircraft is predicted to be reduced to less than the defined applicable separation minima within a specified time period, an acoustic and/or visual alert will be generated to the controller within whose jurisdiction area the aircraft is operating.

15.7.2.1 Local instructions concerning use of the STCA function shall specify, inter alia:

- a) the types of flight which are eligible for generation of alerts;
- b) the sectors or areas of airspace within which the STCA function is implemented;
- c) the method of displaying the STCA to the controller;
- d) in general terms, the parameters for generation of alerts as well as alert warning time;
- e) the volumes of airspace within which STCA can be selectively inhibited and the conditions under which this will be permitted;
- f) conditions under which specific alerts may be inhibited for individual flights; and g) procedures applicable in respect of volume of airspace or flights for which STCA or specific alerts have been inhibited.

15.7.2.2 In the event an STCA is generated in respect of controlled flights, the controller shall without delay assess the situation and, if necessary, take action to ensure that the applicable separation minimum will not be infringed or will be restored.

15.7.2.3 Following the generation of an STCA, controllers should be required to complete an air traffic incident report only in the event that a separation minimum was infringed.

15.7.2.4 The appropriate ATS authority should retain electronic records of all alerts generated. The data and circumstances pertaining to each alert should be analyzed to determine whether an alert was justified or not. Non-justified alerts, e.g. when visual separation was applied, should be ignored. A statistical analysis should be made of justified alerts in order to identify possible shortcomings in airspace design and ATC procedures as well as to monitor overall safety levels.



Short-term conflict alert (STCA)

OAP RT -21

377. Information displayed on situation display can be used for provision to the identified aircrafts:

a) information on any observed aircrafts which follow on the trajectory leading to emergence of the conflict situation with other identified aircrafts and also offers or recommendations for actions for prevention of collision;

10H

VII. Required Attachments

7.1 User's manual AWS "Master"

14D

VII. Required Attachments

7.1 User's manual AWS "Master"

<AWS "Master">

A near collision warning system (NCWS);

System triggers in case of conflict situation and potentially conflict situation. Moreover, extrapolated vectors of an aircraft, the NCWS is triggered for, are colored in red for conflict situation, and in orange for potentially conflict.



Minimum safe altitude warning (MSAW)

PANS-ATM

15.7.4 Minimum safe altitude warning (MSAW) procedures

Note 1. — The generation of minimum safe altitude warnings is a function of an ATC radar data-processing system.

The objective of the MSAW function is to assist in the prevention of controlled flight into terrain accidents by generating, in a timely manner, a warning of the possible infringement of a minimum safe altitude.

Note 2. — In the MSAW function, the reported levels from aircraft with pressure-altitude reporting capability are monitored against defined minimum safe altitudes. When the level of an aircraft is detected or predicted to be less than the applicable minimum safe altitude, an acoustic and visual warning will be generated to the controller within whose jurisdiction area the aircraft is operating.

15.7.4.1 Local instructions concerning use of the MSAW function shall specify, *inter alia*:

- a) the types of flight which are eligible for generation of MSAW;
- b) the sectors or areas of airspace for which MSAW minimum safe altitudes have been defined and within which the MSAW function is implemented;
- c) the values of the defined MSAW minimum safe altitudes;
- d) the method of displaying the MSAW to the controller;
- e) the parameters for generation of MSAW as well as warning time; and f) conditions under which the MSAW function may be inhibited for individual aircraft tracks as well as procedures applicable in respect of flights for which MSAW has been inhibited.



Minimum safe altitude warning (MSAW)

15.7.4.2 In the event an MSAW is generated in respect of a controlled flight, the following action shall be taken without delay:

- a) if the aircraft is being vectored, the aircraft shall be instructed to climb immediately to the applicable safe level and, if necessary to avoid terrain, be assigned a new heading;
- b) in other cases, the flight crew shall immediately be advised that a minimum safe altitude warning has been generated and be instructed to check the level of the aircraft.

15.7.4.3 Following an MSAW event, controllers should complete an air traffic incident report only in the event that a minimum safe altitude was unintentionally infringed with a potential for controlled flight into terrain by the aircraft concerned.



MLAT/ADS-B

PANS-ATM

8.1.7 ATS surveillance systems, such as primary surveillance radar (PSR), secondary surveillance radar (SSR), **ADS-B** and **MLAT** systems may be used either alone or in combination in the provision of air traffic services, including

in the provision of separation between aircraft, provided:

- a) reliable coverage exists in the area;
- b) the probability of detection, the accuracy and the integrity of the ATS surveillance system(s) are satisfactory; and
- c) in the case of ADS-B, the availability of data from participating aircraft is adequate.

8.1.10 ADS-B shall only be used for the provision of air traffic control service provided the quality of the information contained in the ADS-B message exceeds the values specified by the appropriate ATS authority.

8.1.11 ADS-B may be used alone, including in the provision of separation between aircraft, provided:

- a) identification of ADS-B-equipped aircraft is established and maintained;
- b) the data integrity measure in the ADS-B message is adequate to support the separation minimum;
- c) there is no requirement for detection of aircraft not transmitting ADS-B; and
- d) there is no requirement for determination of aircraft position independent of the position-determining elements of the aircraft navigation system.



MLAT/ADS-B

OAP RT -21

320. When using primary surveillance radar the identification of the aircraft is performed by one of the following methods:

a) by establishment of interrelation between specific radar display of location and the aircraft which reports about the location over the point displayed on **MLAT** or about the bearing and distance from this point, and by factual determination of coincidence of the track line of specific radar display of location to the flight trajectory or the reported rate of the aircraft;

323. When using **ADS-B** the identification of aircrafts is performed by one of the following methods:

- a) direct recognition of the identification index of the aircraft in the form ADS-B;
- b) broadcast of the identification ADS-B;
- c) observation of accomplishment of the specifying "Transfer Information of ADS-B in the Mode the Identification".



SITUATION DISPLAY

PANS-ATM

8.2 SITUATION DISPLAY

8.2.1 A situation display providing surveillance information to the controller shall, as a minimum, include position indications, map information required to provide ATS surveillance services and, where available, information concerning the identity of the aircraft and the aircraft level.

8.2.2 The ATS surveillance system shall provide for a continuously updated presentation of surveillance information, including position indications.

8.2.3 Position indications may be displayed as:

- a) individual position symbols, e.g. PSR, SSR, ADS-B or MLAT symbols, or combined symbols;
- b) PSR blips; and
- c) SSR responses.

8.2.4 When applicable, distinct symbols should be used for presentation of:

- a) unintentionally duplicated SSR codes and/or aircraft identification that are unintentionally duplicated;
- b) predicted positions for a non-updated track; and
- c) plot and track data.

8.2.5 Where surveillance data quality degrades such that services need to be limited, symbology or other means shall be used to provide the controller with an indication of the condition.



SITUATION DISPLAY

8.2.6 Reserved SSR codes, including 7500, 7600 and 7700, operation of IDENT, ADS-B emergency and/or urgency modes, safety-related alerts and warnings as well as information related to automated coordination shall be presented in a clear and distinct manner, providing for ease of recognition.

8.2.7 Labels associated with displayed targets should be used to provide, in alphanumeric form, relevant information derived from the means of surveillance and, where necessary, the flight data processing system.

8.2.8 Labels shall, as a minimum, include information relating to the identity of the aircraft, e.g. SSR code or aircraft identification and, if available, pressure-altitude-derived level information. This information may be obtained from SSR Mode A, SSR Mode C, SSR Mode S and/or ADS-B.

8.2.9 Labels shall be associated with their position indications in a manner precluding erroneous identification by or confusion on the part of the controller. All label information shall be presented in a clear and concise manner.



SITUATION DISPLAY

OAP RT -21

377. Information displayed on situation display can be used for provision to the identified aircrafts:

- a) information on any observed aircrafts which follow on the trajectory leading to emergence of the conflict situation with other identified aircrafts and also offers or recommendations for actions for prevention of collision;
- b) information on location of the special phenomena of weather and if it is reasonable recommendations to aircrafts concerning the best options of the bypass of any such areas with adverse weather conditions;
- c) information designed to help the aircraft pilot with accomplishment of its functions on air



Minimum Vectoring Altitude (MVA)

PANS-ATM

8.6.5.2 When vectoring an IFR flight and when giving an IFR flight a direct routing which takes the aircraft off an ATS route, the controller shall issue clearances such that the prescribed obstacle clearance will exist at all times until the aircraft reaches the point where the pilot will resume own navigation. When necessary, the relevant minimum vectoring altitude shall include a correction for low temperature effect.

Note 1. — When an IFR flight is being vectored, the pilot may be unable to determine the aircraft's exact position in respect to obstacles in this area and consequently the altitude which provides the required obstacle clearance. Detailed obstacle clearance criteria are contained in PANS-OPS (Doc 8168), Volumes I and II. See also 8.6.8.2.

Note 2. — It is the responsibility of the ATS authority to provide the controller with minimum altitudes corrected for temperature effect.

8.6.5.3 Whenever possible, minimum vectoring altitudes should be sufficiently high to minimize activation of aircraft ground proximity warning systems.

Note. — Activation of such systems will induce aircraft to pull up immediately and climb steeply to avoid hazardous terrain, possibly compromising separation between aircraft.



Minimum Vectoring Altitude (MVA)

OAP RT - 21

346. Vectoring in the terminal control area is allowed on altitudes not below the minimum, determined by the instruction for production flights in airfield or the aeronautical passport of airfield (helidrome) and published in documents of aeronautical information.

Taking into account the land relief the zone of the vectoring can be divided into sectors, in each of which the minimum altitude of the vectoring is established. Borders of the specified sectors of the vectoring are displayed on the situation display.



Recommendation

Landing clearance procedure

If GCA not performed, landing clearance should be issued by tower controller. The procedure of issuing landing clearance required not only the manual change, but also AIP and organization change (tower, radar) are necessary.

Manual/Regulation requiring amendment: RT-21 368., 4D 4.5.3.

Same frequency issue

Tower and radar(GCA) should be on different frequencies. Because there is a possibility that the pilot side is confused situation and a safety problem arises.

Manual/Regulation requiring amendment: 4D 1.4., 6D 1.4.

Light Gun

Light gun should be introduced to the tower.

Manual/Regulation requiring amendment: new provision



Recommendation

Follow-me car operation

The current operation of follow-me-car should be stopped to decrease controller's workload.

There is a possibility that the A/C and the car come into contact with each other because the distance between the A/C and the car is close and the speed of the car is slow.

TAN requests the airport to stop leading short distance and to improve this operation. the follow-me-car is supposed to be used at night or poor visibility, it is necessary to return to the original operation procedure.

Manual/Regulation requiring amendment: 4D 4.5.1., 4.5.3.

Low intensity of air traffic

It will be helpful if Supervisor combine the sector. But it is necessary to consider whether 5 traffic are appropriate or not.

Manual/Regulation requiring amendment: 10H 1.9., 14D 1.9



Recommendation

Separation for VFR

6D

5.2 While VFR flights in TMA, the following minimum intervals of separation are established:

5.2.1 Vertical - 300 meters (1,000 ft.).

Revised Sentence:

6D

5.2 While VFR flights in TMA, the following minimum intervals of separation are established:

5.2.1 Vertical - **150 meters (500 ft.)**.



Recommendation

Separation for VFR

5.2.1.2. VFR:

- A) to FL285 -300 m (1000 ft.);
- B) When flying below the lower altitude:
 - 150 m. (500 ft.) - at air speeds of 300 km / h or less;
 - 300 m. (1000 ft.) - at air speeds of more than 300 km / h.

Deleted sentence

6D 14D

8H 10H

5.2.2.3. VFR:

- A) between aircraft, following same route and same altitude, or between aircraft and other material object - not less than 2 km;
- B) between the aircraft following the intersecting routes at the same altitude, or between the aircraft and another material object at the time of crossing:
 - not less than 2 km at speeds of 300 km / h or less;
 - not less than 5 km - at speeds over 300 km / h.

Deleted sentence

6D 8D 14D

8H 10H



Recommendation

5.2.3. Lateral:

5.2.3.1. IFR:

- Lateral separation without the use of longitudinal or vertical separation is not applied.

Revised Sentence:

6D 8D 14D
8H 10H

Lateral separation shall be applied so that the distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer. This buffer shall be determined by the appropriate authority and included in the lateral separation minima as an integral part thereof.

Strongly recommend to add all sentences of 5.4.1(Doc.4444)



Recommendation

Separation for VFR

5.2.3.2. VFR:

- When passing through the altitude of the preceding aircraft- not less than 500 m;
- When following the aircraft on a collision course
- at least 2 km.

Deleted sentence

6D 8D 14D
8H 10H



Recommendation

FPS (Flight Progress Strip)

Considering the cost aspect generated by changing to this method, the training period, the influence on the controllers, etc., it is not necessary to introduce FPS. Japan are planning to stop electronic strips in the future and use lists and radar tags. It is realistic that TAN also responds with lists and the like.

Radar Handover

There is no particular problem in terms of regulation, so TAN do not need to add anything in particular.

Speed Control

There is no particular problem in terms of regulation, so TAN do not need to add anything in particular.



Recommendation

Short-term conflict alert (STCA)

There is no particular problem in terms of regulation, so TAN do not need to add anything in particular.

Minimum safe altitude warning (MSAW)

Since there is no regulation concerning MSAW, it is necessary to describe the provision of ICAO.

Manual/Regulation requiring amendment: new provision

Minimum Vectoring Altitude (MVA)

It is necessary to create MVA MAP.

Manual/Regulation requiring amendment: 6D, 8H, 14D, 10H new Attachment



Q & A



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Observation of ATC Facility

Hideo WATANABE

Chief Advisor

Tower

- Observation started at 08:56.
- Two controllers worked at Tower.
- There is no schedule flights until 10:30.
- Tower controller gave information “ runway is clear” about SVR2811 at 19.5km from touchdown to Radar controller.
- Radar controller instructed “clear to land” to the aircraft.
- TJK117(departure) is taxiing via F, follow-me-car is leading the Aircraft (A/C) only 100m to the runway from the spot.
- ATC Communication is only Russian.
- Observation ended at 11:00

Finding

- Tower controller give information of runway condition to the Radar controller.
- Radar controller issues a landing clearance to the aircraft.
- Light-gun is not installed in the tower.
- Follow-me-car operation is increasing controller's workload.
- The distance between the A/C and Follow-me-car is not enough.
- The taxiing speed of the follow-me-car is very slow.

Recommendation

- The procedure of landing clearance issuance should be changed from Radar controller to Tower controller.
- Because Tower controller knows runway condition in real time.
- The operation manual, AIP and ATC structure(Tower and Radar) should be changed to improve safety operation.
- The current operation of follow-me-car should be stopped to decrease controller's workload.
- There is a possibility that the A/C and the car come into contact with each other because the distance between the A/C and the car is close and the speed of the car is slow.
- TAN requests the airport to stop leading short distance and to improve this operation.

Radar, APP & ACC

- Observation started at 14:00
- There is no schedule flight at that time.
- I asked about the ATC operation such as RVSM, Flight Level transition altitude, Speed control, Navi-aid, MLAT, Airspace design.
- ATC communication is using only Russian.
- Observation ended at 15:00

Finding

- There is no VOR/DME only NDB in Tajikistan.
- Airways doesn't connect to Chinese area.
- They don't have any experience for using Speed control procedure.
- ILS runway 27 is still not use.
- They can see “Flight Radar 24” anytime they want.

Recommendation

- TAN should be introduced a DME.
- TAN should consider a new route with China. If TAN make the new routes, the number of over flight in Tajikistan increases, and the navigation fee also increases. There is a possibility that the new route will bring new benefits to TAN.

Other findings and resolutions

09262017

- RVSM operation → no problem
- Air space design (military restricted area) → make new route to China
- LOA (closing FIR) → Even if certain restrictions arise, there is no information from Afghanistan. There are only reports from pilots.
- New ILS (runway 27) → it is still not used.
- Light gun → no equipped at tower.
- Two owners of runway → it will be changed the operation manual, AIP and ATC structure(Tower and Radar).
- Fight Level transition altitude → it is better to unify to one transition altitude for avoiding confusion.

Other findings and resolutions

09262017

- Speed control → they have never been experience.
- VOR/DME → to introduce DME/DME.
- MLAT/ADS-B (double targets) → It was resolved. Two data are unified.
- Top sky for new Tower (Dushanbe ATC system)
- Temporary tower at Khujand airport
- Visual Approach
- Circle to land

ATS System Capacity

Hideo Watanabe
Chief Advisor



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The method of calculating the traffic volume per unit time (= control work load amount) is as follows.

(1) **The control work load** (control work load factor; ○○ sec / min) generated when controlling one aircraft in advance by investigation for each sector is calculated and the value and the prediction from the flight plan at that time (Passing time (minutes)) in that sector to calculate and compute it by multiplying it by the passing time (minutes) in that sector.



(2) **The control workload** generated when controlling one aircraft in that sector is calculated by the following method.

① **Calculation of communication time, manual work time and consideration time.**

An average communication time with the event of the control work.
Calculated by conducting a basic survey of manual work time and consideration time ※.

It will be a permanent value. In Japan we basically used what we did in 1992. We reviewed a part of communication time in FY 2001.

※ Consideration time is based on the idea of Europe (Germany MBB method) around 1990, assuming that there is correlation (proportional) to the communication time of each event, taking into account the degree of difficulty of each work.



② Measurement of occurrence frequency of control task event

Measure the occurrence frequency of the control work event that occurs when controlling one aircraft for each type of operation in each sector (passage, arrival, departure).

③ From ① and ②, find **the control work load (= control work load factor; ○○ sec / min)** generated when one aircraft (pass / arrival / departure / area) stayed in that sector for 1 minute.



Specific calculation method



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1. Calculation method of control work load

For each of the following types of operation ((1) ① to ④), total the operation time of the controller ((2) ① to ③). Also, the operation of the controller is categorized into events ((3) ① - ⑮) and the time and occurrence frequency (number) are totaled.

(1) Operation type of scheduled aircraft to enter the sector

- ① Departure aircraft: aircraft departing from airports etc. in the area of the sector and going out of the sector
- ② Arrival aircraft: aircraft arriving from the outside of the sector and arriving at the airport etc. , within the sector.
- ③ Over flight : aircraft passing through sector
- ④ Internal flight: aircraft that completes flight within the sector



(2) Operation of controller

- ① Radio communication working time: the time when the controller will communicate with the aircraft (pilot)
- ② Manual work time: the time when the controller operates the equipment
- ③ Consideration time: the time that the controller considers in processing aircraft



(3) Control work event

- ① System handoff
- ② Radar handoff other than the above
- ③ Non-radar handoff
- ④ Establish of Identification (ID)
- ⑤ Limited transfer (vertical, fix/point, time etc.)
- ⑥ Altitude change
- ⑦ Route Change (issuance of ATC clearance)
- ⑧ Radar vector (direct to fix/navaids)
- ⑨ Radar vector (with Heading)
- ⑩ Speed adjustment
- ⑪ Temporary maintaining altitude instruction
- ⑫ Holding Instructions
- ⑬ Providing QNH
- ⑭ Approach clearance issuance
- ⑮ Providing relevant traffic information



Survey Form for ACC and APP



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Each aircraft data

ACC

		< Survey form ACC >			
Workload per aircraft in each sector					
Sector :	Date:				
Call-sign :	Stay time: ()	:	~	:	
Control work	Radio communication	Manual work	coordination		
C: controller P: pilot	C	P			
*1 system radar handoff					
*2 radar handoff other than above					
*3 non-radar handoff					
*4 establish of radar identification					
*5 limited transfer (vertical, fix/point, time etc.)					
*6 altitude change					
*7 route change (Issuance of ATC clearance)					
*8 radar vector (direct to fix/navaid)					
*9 radar vector (with heading)					
*10 speed adjustment					
*11 temporary maintain altitude insruction					
*12 holding instruction					
*13 provideing QNH					
*14 approach clearance issuance					
*15 providing traffic information					
Total time (sec)					
Flight type					
Overflight					
Departure					
Arrival					

APP

		< Survey form APP >			
Workload per aircraft in approach area					
Sector :	Date:				
Call-sign :	Stay time: ()	:	~	:	
Control work	Radio communication	Manual work	coordination		
C: controller P: pilot	C	P			
*1 system radar handoff					
*2 radar handoff other than above					
*3 non-radar handoff					
*4 establish of radar identification					
*5 limited transfer (vertical, fix/point, time etc.)					
*6 altitude change					
*7 route change (Issuance of ATC clearance)					
*8 radar vector (direct to fix/navaid)					
*9 radar vector (with heading)					
*10 speed adjustment					
*11 temporary maintain altitude insruction					
*12 holding instruction					
*13 provideing QNH					
*14 approach clearance issuance					
*15 providing traffic information					
Total time (sec)					
Flight type					
Overflight					
Departure					
Arrival					



ACC day1

	Call sign	OP type	system radar handoff	radar handoff other than left	Non-radar handoff	establish of radar identification
1						
2						
3						
4						
5						
6						
7						
8						
9						

ACC total 7 days

	Number of Aircraft	system radar handoff	radar handoff other than left	Non-radar handoff	establish of radar identification
ACC Sector North					
Overflight					
Departure					
Arrival					
Total					
ACC Sector South					
Overflight					
Departure					
Arrival					
Total					



3. Aggregation (data collection) method

Based on the following, the average control work load (total control work load) per aircraft for each type of operation in the airspace is calculated. (See attachment for an example of calculation method)

(1) Frequency of occurrence of control task event

To count the number of occurrences for each control task event and calculate the average value.

✂ Attachment "Method of calculating control work load (example)" ①

(2) Radio communication working time

To measure the radio communication time (transmission / reception time) for each control task event and calculate the average value.

✂ Attachment "Method of calculating control work load (example)" ②



Calculation method of control work load unit value (example)

Calculation method of control work load unit value (example)							
	Event example→	Altitude change	Vectoring	Speed control	Temporarily altitude	...	
①Event occurrence frequency		0.087	0.330	0.693	0.006	All of Event Aggregate	
②Communication work time		8.00	7.00	7.00	8.00		
③Event handling time (FPS entry processing time)		1.30	1.30	1.30	1.30		
④Event handling time (IECS terminal operation time)		3.00					
⑤Event handling time not handled (DCU / DCP operation time) (Site / frequency switching time)							8.59
⑥Control work time (event correspondence) 【(②+③+④) × ①】		1.08	2.74	5.75	0.06	All of Event Aggregate	49.6
⑦Difficulty index		1.50	2.00	1.50	1.50		
⑧Consideration time 【① × ② × ⑦】		1.05	4.63	7.28	0.08		46.9
⑨Control work load (event correspondence) 【⑥+⑧】		2.12	7.37	13.03	0.14		96.5
⑩Total control work load 【⑤+⑨】							105.1
⑪Average stay time							13.9
⑫Control work load unit value【⑩÷⑪】							7.6

Calculation method of control work load unit value (example)						
Event example→	Altitude change	Vectoring	Speed control	Temporally altitude	...	
①Event occurrence frequency	0.007	0.220	0.602	0.006	All of Event Aggregate	
②Communication work time	8.00	7.00	7.00	8.00		
③Event handling time (FPS entry processing time)	1.30	1.30	1.30	1.30		
④Event handling time (IECS terminal operation time)	3.00					
⑤Event handling time not handled (DCU / DCP operation time) (Site / frequency switching time)						8.59
⑥Control work time (event correspondence) 【(②+③+④) × ①】	1.08	2.74	5.75	0.06	All of Event Aggregate	49.6
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⑪Average stay time						13.9
⑫Control work load unit value【⑩÷⑪】						7.6

(3) Manual work time

To measure the manual operation time (instrument operation time) of the controller and calculate the average value.

※ in the separate sheet "Method for calculating control work load (example)" ③④⑤

(4) Consideration time

Since it cannot be measured, it is calculated by multiplying the occurrence frequency for each control task event and the communication work time by a factor (difficulty index).

※ ⑧ of the separate sheet "Calculation method of control work load (example)"

(5) Difficulty index

Pre-set for each control task event based on the survey.

※ ⑦ of the separate sheet "Calculation method of control work load (example)"



Calculation method of control work load unit value (example)						
Event example→	Altitude change	Vectoring	Speed control	Temporally altitude	...	
①Event occurrence frequency	0.087	0.330	0.693	0.006	All of Event Aggregate	
②Communication work time	8.00	7.00	7.00	8.00		
③Event handling time (FPS entry processing time)	1.30	1.30	1.30	1.30		
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⑩Total control work load 【⑤+⑨】						105.1
⑪Average stay time						13.9
⑫Control work load unit value【⑩÷⑪】						7.6

4. Application to operation

In actual operation, the stay time of the aircraft in the airspace is calculated based on the flight plan but it is not constant. Therefore, after dividing the total control work load by the average staying time for each type of operation to calculate the control work load per minute (control work load unit) in advance. The control work load on the ATFM system is calculated in real time. The work load is calculated by multiplying the staying time in the airspace based on the flight plan of each aircraft by the control work load unit value.



Calculation method of control work load unit value (example)						
Event example→	Altitude change	Vectoring	Speed control	Temporally altitude	...	
①Event occurrence frequency	0.087	0.330	0.693	0.006	All of Event Aggregate	
②Communication work time	8.00	7.00	7.00	8.00		
③Event handling time (FPS entry processing time)	1.30	1.30	1.30	1.30		
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⑦Difficulty index	1.50	2.00	1.50	1.50		
⑧Consideration time 【① × ② × ⑦】	1.05	4.63	7.28	0.08		46.9
⑨Control work load (event correspondence) 【⑥+⑧】	2.12	7.37	13.03	0.14		96.5
⑩Total control work load 【⑤+⑨】						105.1
⑪Average stay time						13.9
⑫Control work load unit value【⑩÷⑪】						7.6

Event	Difficulty index
Providing QNH	0.25
Transfer/Receiving of control by system handoff with radio communication	0.75
Receiving position report Transfer/Receiving of control by verbal handoff with radio communication Limited transfer (vertical, fix/point, time etc.) Weather information Information transfer	1.00
Transfer/Receiving of control by manual with radio communication Establish of Radar Identification Providing related traffic information In case of unable to change altitude or route Approach clearance issuance	1.25
Holding instruction Speed adjustment Issuing ATC clearance Altitude change Flight plan reception	1.50
Radar Vector (Direct to fix/navaid)	1.75
Radar vector (with Heading)	2.00



Discussion

1. To select the calculation method or integrated with others
2. To consider control work (task)
3. To consider difficulty index
4. To consider duration of data collection for ATC capacity



Answers to questions From the capacity team



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Лоиҳа оид ба баланд намудани потенциал дар самти хизматрасонии ҳаракати ҳавой
Проект по повышению потенциала в сфере обслуживания воздушного движения
The Project for Capacity Development in Air Traffic Services

1. In the form you request to fill the time for each event, what time?
Time to give instruction (speech)? or time to perform the given instruction (action) or both?

→ ***Write down the actual time spent for ATC instruction and readback from pilot.***

2. Dushanbe ACC is divided in to 2 positions: ACC-Procedure, ACC-Radar, in which any of ACC controller able to work.
These both positions have different duties, different coordination, only Radar communicates with aircraft.
How to indicate this in form, to make separate or in one sheet...?
If to do separately, it also takes time to relay information from ACC-P to ACC-R.

→ ***In the same sector, target only for radar control positions.***



3. Not like ACC-P sector (with 2 ATC), everything is done by 1 ATC at other working positions (APP, RADAR)
How to be with that?

→***For each position (APP, Radar)***

4. We figured out, that in normal operations, it takes about 1 minute to communicate with the aircraft, and to get response from aircraft. But there could be different situations (fog, diversion, marginal weather and etc.) in which ATC can spend more time to consider, to analyze, to communicate, to give appropriate instruction...

→***A survey conducted in Japan has spanned over a year. Because there are four seasons, a period of one year was necessary. If it is thought that a more accurate capacity value is to be issued, it is necessary to conduct a similar investigation in Tajikistan.***



Our TAN's events very differ from Japanese original events and difficulty index events. Please make sure correspondences among Japanese survey, index and our tasks, before justifying to use Japanese index as it is or need to create our original index by TAN.

→ ***I think that it is necessary to create difficulty index of TAN with reference to Japan's difficulty index.***



“Consideration” time for each events have a strong correlation with the task of “Radio Communication” time is an essential hypothesis for estimating it by the difficulty index. If “Manual Works” or “Coordination” were included “Radio Communication” in raw data, it is logically impossible to estimate the “Consideration” time by using difficulty index. Please give us clear explanation on that.

→ *If manual data and coordination are included in raw data, it is necessary to separate them from radio communication.
I think that it is necessary to consider work of Procedure controller and Radar controller separately.*



We are still confusing on the definition of this parameter.

Please send us the written instruction in Japanese or reason for modifying.

→ ***There is nothing written in Japanese, and I do not modify it either.***

***Event occurrence frequency
= number of occurred event to aircraft / total
number of aircraft***



8.59s

Please give us clear instruction that TAN's all sectors could use this Japanese fixed figure or not. TAN cannot judge it because it is still unclear how Japan obtained this. Is there no relation with other events or "Manual Works" task?

→ ***It is necessary to do the work regardless of the control event, so we need to gather data in TAN.***



Low traffic volume data can explain the Peak conflict capacity?

We need clear justification and explanation by Japanese methodology, because we feel strongly about a conflict situation affecting workload.

→ *We think it is possible because we calculate the controller's workload for one aircraft. Of course, it is necessary to coordinate with the controllers in the field before actually applying the calculated value. Evaluation using a radar simulator leads to a capacity value suitable for actual situation. Additional consideration when traffic volume is high needs to be done.*



We cannot divide into the role on those two seats,
because when less than five aircraft per hour in ACC, we
can merge those two responsibilities into one.

→ *The Japanese method is to calculate the workload
of the Radar controller.*

*Could you please tell me the task sharing of
Procedure controller and Radar controller in TAN?*



1) Item "1-Event occurrence frequency". How is this calculated?
We couldn't find raw data in Excel sheet.

→ ***Event occurrence frequency =
number of aircraft which was occurred the event / total number
(arrival) aircraft***

Total arrival aircraft is 17.

***There was no raw data in Excel sheet because I wrote the
calculated data on paper, it is not listed in Excel.***



Item "12-Control work load unit value", what that means and how did you use that number - 38.8 in calculating capacity?

→ ***"UNIT (work load / min)" is used for forecasting of traffic volume.***



All data provided was about 1 aircraft/hour in each of our sectors, not so many traffic at the moment. But what if it increases significantly?

Using the calculation method and results, which you provided, is it possible to identify the maximum amount of aircraft of each sector?

→ ***You can use the UNIT value to calculate the ATC capacity (aircraft number/hour) in the flight plan status (refer to above the matrix).***



One of the important things is Difficulty Index.

It would be nice, if you provide more information on obtaining that difficulty index in Japan.

How it was obtained? Is it constant? and etc.

Because we are in doubt, is it ok to use the same difficulty index, or to assign another number. But what number?

It could be 0.25 to 2, why not 0.35?

We are not sure that it could be the same as Japanese, because there are different sectors, airways, and etc. in Japan.

→ ***Difficulty index is made by result of the questionnaire survey of 160 full-rated ACC controller in Japan.***

If you are in doubt for sample of difficulty index, you can decide your difficulty index yourself.

I know TAN is not same condition in Japan. But ATC controller's work load is same, I believe.

We do not know in detail what they thought, and now it is very difficult to know about that because this survey was conducted in 1992. I will try to get more information.



Still confusing moment appear. Here, in the Occurrence column you indicated that the Event occurs only once or didn't occur at all. But there is possibility that some control events may be given/instructed to 1 aircraft several times, more than once (e.g. altitude change, wx info). In that case the Frequency rate will be more than 1.0.

→ The same instructions are given twice to A's aircraft and the same instructions are given to A's aircraft and B's aircraft once, the controller's workload will be the same value.

If the same event occurs on 10 of the 10 aircraft and the same event occurs twice on 2 aircraft, the event occurrence rate is 1.20 (12 events/ 10 aircraft).



On the contrary if we assume that it happens only once, in Calculation sheet of RADAR-Departure, column of providing QFE/QNH is 1.750, what about that one?
Maybe this is, the occurrence, the average amount of events happened per one aircraft?

→ ***The occurrence = number of aircraft which was occurred the event / total number of aircraft***



In item 3 and 4, what is IECS? In the final version of survey form 3 and 4 refer to Manual Work, system input, manually making operation on Master system and planning system, which were separate from Radio Communication. In which control event this included? Can you explain it?

→ ***IECS is “Integrated En-route Control System”.***
If you can separate manual work time and system input time from communication time, which will be better and clearer.



Regarding item 5, 8.59, fixed on. Still don't understand why it's fixed for all sectors and how it's obtained? Why just added item 5 to item 9 (5+9 in item 10)?

→ ***The frequency switching time at the RCAG site and the switching time within the system are included as fixed values. I think that the time (work time not related events) is unnecessary in TAN because situation is different from Japan. In Japan, this time is kept constant since many inputs to the radar display screen are used, and since this site uses different sites at the same frequency, this switching is frequent.***



Capacity WG should be considered the following;

- 1 Review of control events (maybe you need to break more)
- 2 Change of survey form (according review of control event)
- 3 Review of difficulty index
- 4 To conduct survey for capacity using recorded data or rolling paper
- 5 To calculate the capacity based on the survey



TAN want to calculate the maximum number of control processing traffic. (Actual principle)

JCAB calculates the minimum number of control processing traffic safely. (Theoretical)



Modification Method For TAN



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1. Attention to the task of Radar controller

Japan's calculation method is considered only by the Radar controller.
It is necessary to separate work(task) of Radar controller and Procedure controller.
Then calculate the workload of the Radar controller.

2. Scrutinize control events

To investigate control events, review the contents, and review necessary events.

3. Data collection

To create survey format for collecting data in an easy-to-insert form by the controller.

4. Difficulty index

To investigate the difficulty index for the controller and conduct thorough consideration.
Difficulty index is determined based on the survey results, but after a certain period of time has to be reviewed.



Q & A



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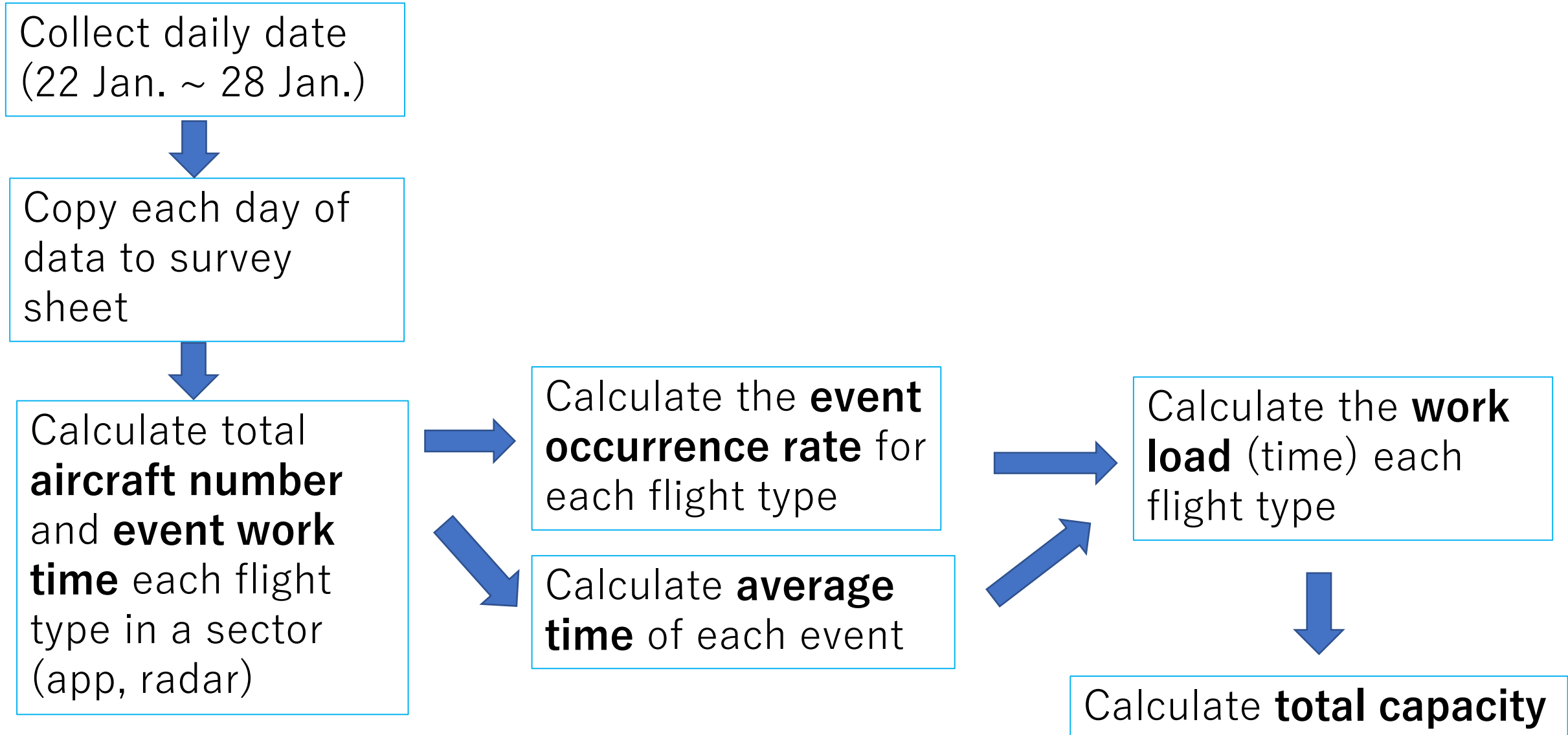
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Calculation work flow

Hideo Watanabe

Chief Advisor

Work done by Capacity Team



Calculation detail procedure

Hideo Watanabe
Chief Advisor

To calculate average work time and occurrence rate

	Call sign	OP type	transfer information from other ACC or sector
	difficulty index		0.750
1	KZR907	O	11
2	UZB551	O	8
1	SVR2920	D	20
2	UTA804	D	16

Select OP type



	Call sign	OP type	transfer information from other ACC or sector
1	TJK628	A	16
2	SVR2989	A	20
3	KZR131	A	22
4	MBZGF	A	35
5	SMR1274	A	25
6	UTA801	A	30

28	SBI3295	A	18
32	SMR1274	A	19
35	SVR2879	A	30
	Total work time		601
	Number of event happened		24
	Average work time		25.04166667
	occurrence rate		0.923076923



=SUBTOTAL(9,D10:D106)

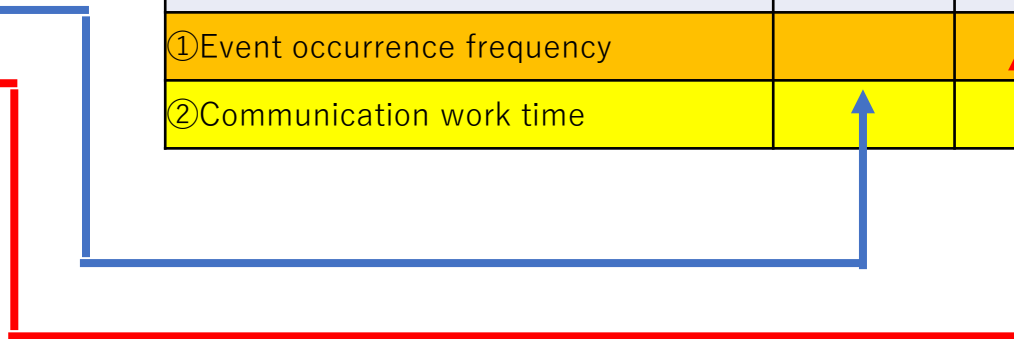
=D107/D108

=D108/26(total number A/C)

Input data to Calculation sheet

Total work time		601	375
Number of event happened		24	25
Average work time		25.04166667	15
occurrence rate		0.923076923	0.961538462

Calculation method of control work load unit value (ACC)			
ARRAVAL			
	transfer information from other ACC or sector	initial contact	radar ID
①Event occurrence frequency			
②Communication work time			



Input data to Calculation sheet

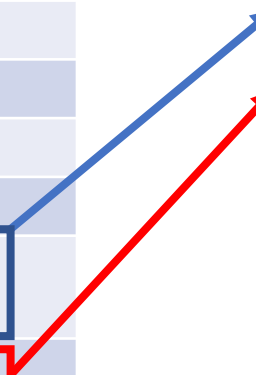
Event	index	
	0.25	
system handoff	0.75	
transfer information from other ACC or sector	1.00	
transfer information to APP		
transfer information to RADAR		
transfer information from APP		
transfer information to tower		
initial contact		
WX information		
contact (APP, RADAR, Tower)		
others		
temporary maintain altitude instruction	1.25	
Radar ID		
route change		
providing traffic information		
approach clearance issuance		
altitude change	1.50	
speed adjustment		
holding instruction		
Issuing landing clearance		
Providing QFE/QNH (first inform QFE, then pilot requested QNH)	1.75	
radar vectoring	2.00	
Go around/missed approach		

	transfer information from other ACC or sector	initial contact
①Event occurrence frequency		
②Communication work time		
③Event handling time (Recording paper roll entry processing time)		
④Event handling time (Master terminal operation time)		
⑤Event handling time not handled (DCU / DCP operation time) (Site / frequency switching time)		
⑥Control work time (event correspondence) 【 (② + ③ + ④) × ①】	0.00	0.00
⑦Difficulty index		
⑧Consideration time 【① × ② × ⑦】	0.00	0.00
⑨Control work load (event correspondence) 【⑥ + ⑧】	0.00	0.00

Input data to Calculation sheet

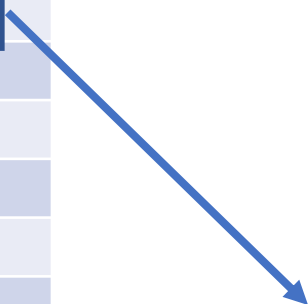
	Type of operation	(sec)
1. Staying time		
(1) ACC	arrival	7.00
	departure	10.00
	overflight	16.00
(2) APP	arrival	4.00
	departure	4.50
(3) Radar	arrival	12.00
	departure	5.00
2. Manual work		
(1) written work for template of record		1.50
(2) input to Master system		3.00
3. DCU/DCP work		
(not related to events)		8.50

	transfer information from other ACC or sector	initial contact
①Event occurrence frequency		
②Communication work time		
③Event handling time (Recording paper roll entry processing time)		
④Event handling time (Master terminal operation time)		
⑤Event handling time not handled (DCU / DCP operation time) (Site / frequency switching time)		
⑥Control work time (event correspondence) 【 (② + ③ + ④) × ①】	0.00	0.00
⑦Difficulty index		
⑧Consideration time 【① × ② × ⑦】	0.00	0.00
⑨Control work load (event correspondence) 【⑥ + ⑧】	0.00	0.00



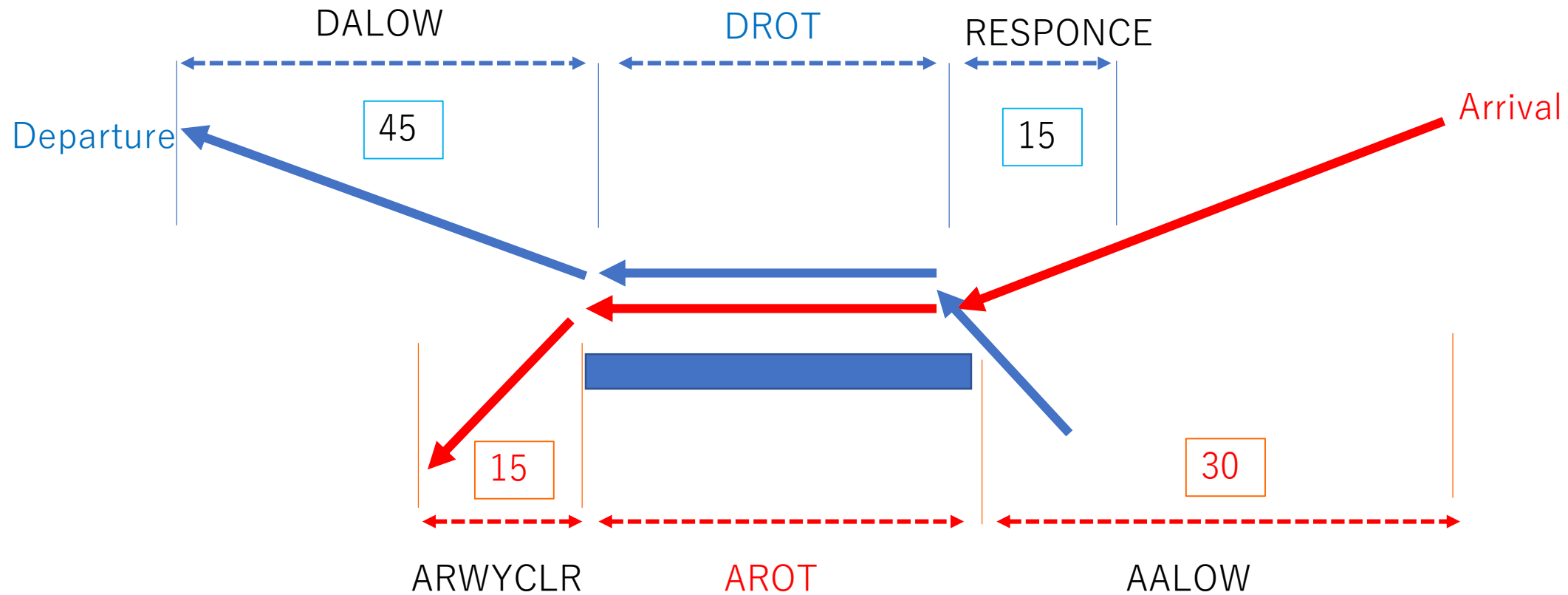
Input data to Calculation sheet

	Type of operation	(sec)
1. Staying time		
(1) ACC	arrival	7.00
	departure	10.00
	overflight	16.00
(2) APP	arrival	4.00
	departure	4.50
(3) Radar	arrival	12.00
	departure	5.00
2. Manual work		
(1) written work for template of record		1.50
(2) input to Master system		3.00
3. DCU/DCP work		
(not related to events)		8.50



⑩ Total control work load 【⑤ + ⑨】		0.0
⑪ Average stay time		0.0
⑫ Control work load unit value 【⑩ ÷ ⑪】		0.0

Runway Capacity calculation



Input data to Calculation sheet

	Arrival					Time(Sec)				Arrival					Time(Sec)	
AROT	Arrival Runway Occupation Time					60.00			DROT	Departure Runway Occupation Time					35.00	
	Duration time from over the runway approach end threshold to the leaving runway edge to the taxi way.									Average Duration time from start take off roll to the time take off or time passing 1800m point which ever later.						
AALLOW	Arrival ALLOWance(Constant)					30.00			DALLOW	Departure safety ALLOWANCE (Constant)					45.00	
	Time Allowance due to the variation in arrival speed									Time Allowance to secure safe (radar) separation						
ARWYCLR	Arrival RWY CLEAR					15.00			RESPONSE	RESPONSE					15.00	
	After leaving runway edge till completely clear runway									Pilot's respose time for take off clearance						
ADEV	AROT standard DEVIation					7.50			DDEV	DPORT standard DEVIation					5.00	
A	Arrival Departure probability for Arrival					0-1			D	Arrival Departure probability for Departure					0-1	
A*A*A	t1=AROT+AALLOW+ARWYCLR+2.6*ADEV					124.50			A*D*A	t3=DROT+RESPONSE+3*SQRT(DDEV^2+ADEV^2)					77.04	
A*A*D	t2=AROT+AALLOW+ARWYCLR					105.00			A*D*D	t4=DROT+RESPONSE					50.00	
D*A*A	t1=AROT+AALLOW+ARWYCLR+2.6*ADEV					124.50			D*D*A	t5=DROT+DALLOW+RESPONSE+3*DDEV					110.00	
D*A*D	t2=AROT+AALLOW+ARWYCLR					105.00			D*D*D	t6=DROT+DALLOW+RESPONSE					95.00	
				A:	D:	A:	D:	A:	D:	A:	D:	A:	D:	A:	D:	A:
				1.00	0.00	0.90	0.10	0.80	0.20	0.70	0.30	0.60	0.40	0.50	0.50	0.40
	Probabil ity Combina tion		Processin g Time	Combined Probability	Combined Probability *Proces sing Time	Combined Probability	Combined Probability *Processing Time	Combined Probability	Combined Probability *Processing Time	Combined Probability	Combined Probability *Processing Time	Combined Probability	Combined Probability *Processing Time	Combined Probability	Combined Probability *Processing Time	Combined Probability
	a-A-a	A*A*A	124.50	1.00	124.50	0.73	90.76	0.51	63.74	0.34	42.70	0.22	26.89	0.13	15.56	0.06
	a-A-d	A*A*D	105.00	0.00	0.00	0.08	8.51	0.13	13.44	0.15	15.44	0.14	15.12	0.13	13.13	0.10
	d-A-a	D*A*A	124.50	0.00	0.00	0.08	10.08	0.13	15.94	0.15	18.30	0.14	17.93	0.13	15.56	0.10
	d-A-d	D*A*D	105.00	0.00	0.00	0.01	0.95	0.03	3.36	0.06	6.62	0.10	10.08	0.13	13.13	0.14
	a-D-a	A*D*A	77.04	0.00	0.00	0.08	6.24	0.13	9.86	0.15	11.33	0.14	11.09	0.13	9.63	0.10
	a-D-d	A*D*D	50.00	0.00	0.00	0.01	0.45	0.03	1.60	0.06	3.15	0.10	4.80	0.13	6.25	0.14
	d-D-a	D*D*A	110.00	0.00	0.00	0.01	0.99	0.03	3.52	0.06	6.93	0.10	10.56	0.13	13.75	0.14
	d-D-d	D*D*D	95.00	0.00	0.00	0.00	0.10	0.01	0.76	0.03	2.57	0.06	6.08	0.13	11.88	0.22
			Sum		124.50	Sum	118.07	Sum	112.22	Sum	107.03	Sum	102.55	Sum	98.88	Sum
			No Of Aircraft		28.92	No Of Aircraft	30.49	No Of Aircraft	32.08	No Of Aircraft	33.64	No Of Aircraft	35.10	No Of Aircraft	36.41	No Of Aircraft

Input data to Calculation sheet

Data sheet

	Airport Arrival		
	Call sign	type of aircraft	RWY occupancy time (AROT)
1	THY254	A321	230
2	JRC6537		76

	Arrival	Time(Sec)
AROT	Arrival Runway Occupation Time	60.00
	Duration time from over the runway approach end threshold to the leaving runway edge to the taxi way.	
AALLOW	Arrival ALLOWance(Constant)	30.00
	Time Allowance due to the variation in arrival speed	
ARWYCLR	Arrival RWY CLEAR	15.00
	After leaving runway edge till completely clear runway	
ADEV	AROT standard DEVIation	7.50
A	Arrival Departure probability for Arrival	0-1

Input data to Calculation sheet

Data sheet

	Airport Departure		
	Call sign	type of aircraft	RWY occupancy time(DROT)
1	RED121		42
2	TED 9181		38

	Arrival	Time(Sec)
DROT	Departure Runway Occupation Time	35.00
	Average Duration time from start take off roll to the time take off or time passing 1800m point which ever later.	
DALLOW	Departure safety ALLOWANCE (Constant)	45.00
	Time Allowance to secure safe (radar) separation	
RESPONSE	RESPONSE	15.00
	Pilot's respose time for take off clearance	
DDEV	DPORT standard DEVIation	5.00
D	Arrival Departure probability for Departure	0-1

Runway capacity Sliding Scale

Method in Japan

Runway Capacity

1) Airport capacity is RUNWAY CAPACITY

The capacity of the airport is calculated by runway capacity.

Among other resources such as capacity of the air traffic controllers, customs and immigration, securities or physical restraint of number of spots, parking lot etc. the runway capacity is the smallest of all resources. So the runway capacity produces bottle neck value thus defines airport capacity.

Another reason that also supports this is the runway is the one of the most difficult/expensive resource to come by. (In some cases, for instance, number of spots could be a restraint because of the in-balance between number of departures and arrivals. If this restraint is smaller than runway restraint, you have to make special considerations.)

2) Calculation of runway capacity using sliding scale table

1. For Departure and Arrival sequence following 8 combinations are available.
2. For each combination operation time of aircraft for “Arrival” or “Departure” considering both preceding arrival/departure and succeeding arrival/departure is estimated.

Operation time consists of Runway Occupation time, Allowance time to secure safety and pilot Response time for departure clearance etc. (See below table)

	Arrival	Time(Sec)
AROT	Arrival Runway Occupation Time	60.00
	Duration time from over the runway approach end threshold to the leaving runway edge to the taxi way.	
AALLOW	Arrival ALLOWance(Constant)	30.00
	Time Allowance due to the variation in arrival speed	
ARWYCLR	Arrival RWY CLEAR	15.00
	After leaving runway edge till completely clear runway	
ADEV	AROT standard DEViation	7.50
A	Arrival Departure probability for Arrival	0–1

	Departure	Time(Sec)
DROT	Departure Runway Occupation Time	35.00
	Average Duration time from start take off roll to the time take off or time passing 1800m point which ever later.	
DALLOW	Departure safety DALLOWance (Constant)	45.00
	Time Allowance to secure safe (radar) separation	
RESPONSE	RESPONSE	15.00
	Pilot's response time for takeoff clearance	
DDEV	DPORT standard DEViation	5.00
D	Arrival Departure probability for Departure	0–1

3. For Each combination calculate operation time

- ① a-A-a $t1=AROT+AALLOW+ARWYCLR+2.6*ADEV=124.50$
- ② a-A-d $t2=AROT+AALLOW+ARWYCLR=105.00$
- ③ d-A-a $t1=AROT+AALLOW+ARWCLR+2.6*ADEV=124.50$
- ④ d-A-d $t2=AROT+AALLOW+ARWYCLR=105.00$
- ⑤ a-D-a $t3=DROT+RESPONSE+3*SQRT(DDEV^2+ADEV^2)=77.04$
- ⑥ a-D-d $t4=DROT+RESPONSE=50.00$
- ⑦ d-D-a $t5=DROT+DALLOW+RESPONSE+3*DDEV=110.00$
- ⑧ d-D-d $t6=DROT+DALLOW+RESPONSE=95.00$

<Aircraft Operation time for departure and arrival including safety margins>

1 ARR+ARR+ARR

Preceding Arrival	AALLOW	AROT	2.6*ADEV	ARWYCLR			
Arrival					AALLOW	AROT	2.6*ADEV ARWYCLR
Succeeding Arrival							AALLOW AROT 2.6*ADEV

The time required for one arrival aircraft is "1 mile flight time" + "runway occupancy time of arrival aircraft" + "2.6 * standard deviation"

2 ARR+ARR+DEP

Preceding Arrival	AALLOW	AROT	2.6*ADEV	ARWYCLR			
Arrival					AALLOW	AROT	AEWYCLR 2.6*ADEV
Succeeding Departure					RESPONSE	DROT	3.0*DDEV

The time required for one arrival aircraft is "1 mile flight time" + "runway occupancy time of arrival aircraft" + "time from runway edge to stop line"

3 DEP+ARR+ARR

Preceding Departure	DROT	3.0*DDEV					
Arrival			AALLOW	AROT	2.6*ADEV	ARWYCLR	
Succeeding Arrival						AALLOW	AROT 2.6*ADEV ARWYCLR

The time required for one arrival aircraft is "time of flight of one mile" + "time of occupancy of the aircraft on the arrival aircraft" + "standard deviation x 2.6" + "time from the runway edge to the stop line"

4 DEP+ARR+DEP

Preceding Departure	DROT	3.0*DDDev					
Arrival			AALLOW	AROT	ARWYCLR	2.6*ADEV	
Succeeding Depature					RESPONSE	DROT	3.0*DDEV

The time required for one arrival aircraft is "1 mile flight time" + "runway occupancy time of arrival aircraft" + "time from runway edge to stop line"

5 | ARR+DEP+ARR

Preceding Arrival	AALLOW	AROT	ARWYCLR	2.6*ADEV		
Departure			RESPONSE	DROT	3.0*ADDev	
Succeeding Arrival						AALLOW AROT 2.6*ADEV ARWYCLR

The time required for one departure aircraft is "response to takeoff clearance" + "runway occupancy time of departure aircraft" + "standard deviation for arrival and departure x 3"

6 | ARR+DEP+DEP

Preceding Arrival	AALLOW	AROT	ARWYCLR	2.6*ADEV		
Departure			RESPONSE	DROT	3.0*DDEV	
Succeeding Departure					DALLOW RESPONSE DROT 3.0*DDEV	

The time required for one departure plane is "response to takeoff clearance" + "runway occupancy time of the departure aircraft"

7 | DEP+DEP+ARR

Preceding Departure	RESPONSE	DROT	3.0*DDEV			
Departure			DALLOW	RESPONSE	DROT	3.0*DDEV
Succeeding Arrival						AALLOW AROT 2.6*ADEV

The time required for one departure aircraft is "safety interval with preceding departure aircraft" + "response to takeoff clearance" + " runway occupancy time of the departure aircraft " + "standard deviation for departure x 3"

8 | DEP+DEP+DEP

Preceding Departure	RESPONSE	DROT	3.0*DDEV			
Departure			DALLOW	RESPONSE	DROT	3.0*DDEV
Succeeding Departure					DALLOW RESPONSE DROT	

The time required for one departure aircraft is "safety interval with preceding departure aircraft" + "response to takeoff clearance" + " runway occupancy time of the departure aircraft "

When applying to heavy aircraft is "safety interval with preceding departure aircraft" + "response to takeoff clearance" + " runway occupancy time of the departure aircraft "= 120 sec

4. Calculate total time by changing probabilities of occurrence from Arrival=1.00 (Departure=1-Arrival) to Arrival=0.00 (sliding scale)

[NOTE] If Arrival is 0.7 then Departure is 0.3. The Occurrence Probability for a-D-a is $0.7*0.3*0.7=0.147$. Time for this operation is $0.147*77.04=11.32(\text{sec})$

5. Get number of aircraft handled in an hour by dividing 3600sec by Total time.

Number of aircraft handled will increase as the relative proportion of departure increases.

(This is based on the fact that generally arrival takes longer time than departure in this calculation)

SLIDING SCALE TABLE

Sequence			Probability		A:		D:		A:		D:		A:		D:		A:		D:		
					P(A)		Time		P(A)		Time		P(A)		Time		P(A)		Time		
			Process		P(A)		Time		P(A)		Time		P(A)		Time		P(A)		Time		P(A)
a-A-a	A*A*A	124.50	1.000	124.50	0.729	90.76	0.512	63.74	0.343	42.70	0.216	26.89	0.125	15.56							
a-A-d	A*A*D	105.00	0.000	0.00	0.081	8.51	0.128	13.44	0.147	15.44	0.144	15.12	0.125	13.13							
d-A-a	D*A*A	124.50	0.000	0.00	0.081	10.08	0.128	15.94	0.147	18.30	0.144	17.93	0.125	15.56							
d-A-d	D*A*D	105.00	0.000	0.00	0.009	0.95	0.032	3.36	0.063	6.62	0.096	10.08	0.125	13.13							
a-D-a	A*D*A	77.04	0.000	0.00	0.081	6.24	0.128	9.86	0.147	11.32	0.144	11.09	0.125	9.63							
a-D-d	A*D*D	50.00	0.000	0.00	0.009	0.45	0.032	1.60	0.063	3.15	0.096	4.80	0.125	6.25							
d-D-a	D*D*A	110.00	0.000	0.00	0.009	0.99	0.032	3.52	0.063	6.93	0.096	10.56	0.125	13.75							
d-D-d	D*D*D	95.00	0.000	0.00	0.001	0.10	0.008	0.76	0.027	2.57	0.064	6.08	0.125	11.88							
			Total Sec	124.50	Total Sec	118.07	Total	112.22	Total	107.02	Total	102.55	Total	98.88							
			No	28.92	No	30.49	No	32.08	No	33.64	No	35.10	No	36.41							

3) To maximize number of traffic creation of optimal traffic mix is very important.

Sliding scale based on the idea that a certain combination appears according to the proportion defined by the given probability. For instance if probability for occurrence for arrival is 0.5 (in this case probability for departure is also 0.5) theoretically all 8 combination appears with the same probability 0.125.

But usually this would not happen. Air traffic controller intervene the traffic flow and try to minimize the arrival/departure delays. For instance, if the number of arrival traffic is larger than departure traffic then 2 by 1 operations will be taken. This operation means two successive arrivals then one departure. If the arrival and departure number of traffic are well balanced one by one operation is most effective.

Suppose you have 17 departures during the initial half of the given an hour then 16 arrivals during the later part, you will get 33 aircraft. But if you could arrange arrival and departure alternately you will be able to handle total of 46 aircraft.

First 17 departures then 16 arrivals

	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	A1	A2	A3
Accumulated Time	95	190	285	380	475	570	665	760	855	950	1045	1140	1235	1330	1425	1520	1570	1695	1819	1944
Process Time	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	50	124.5	124.5	124.5

A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
2068	2193	2317	2442	2566	2691	2815	2940	3064	3189	3313	3438	3562
124.5	124.5	124.5	124.5	124.5	124.5	124.5	124.5	124.5	124.5	124.5	124.5	124.5

Dep 17

Arr 16

Total 33

23 Departures and 23 Arrivals alternates

	D1	A1	D2	A2	D3	A3	D4	A4	D5	A5	D6	A6	D7	A7	D8	A8	D9	A9	D10	A10	D11	A11	D12	A12	D13	A13
Accumulated time	50	155	205	310	360	465	515	620	670	775	825	930	980	1085	1135	1240	1290	1395	1445	1550	1600	1705	1755	1860	1910	2015
Process time	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105

D14	A14	D15	A15	D16	A16	D17	A17	D18	A18	D19	A19	D20	A20	D21	A21	D22	A22	D23	A23
2065	2170	2220	2325	2375	2480	2530	2635	2685	2790	2840	2945	2995	3100	3150	3255	3305	3410	3460	3565
50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105	50	105

Dep 23

Arr 23

Total 46

MVA MAP Development

Chief Advisor
Hideo Watanabe



www.tj-ats.com

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Проект по повышению потенциала в сфере обслуживания воздушного движения
The Project for Capacity Development in Air Traffic Services

1. Establish MVA

(1) Determination of MVA

MVA can be made higher altitude according to standards, taking into consideration the characteristics of air traffic, control airspace or the performance of radar equipment.

In particular, regarding ASR, MVA in areas where the traffic flow changes dramatically, such as mountainous areas, will be over 2000 ft above the obstacle unless special need arises.

(2) Relationship between MVA and other specified altitudes

Matching between MVA and other designated altitudes (MEA, MDA, MRA, etc.) is not necessarily required.



(3) Relationship between MVA setting range and radar covering area

As a general rule, the range of MVA shall be the maximum coverage of the radar which is theoretically calculated. However, it does not preclude consideration of effective coverage of the radar.

(4) Flight check related to setting of MVA

Since the effective coverage of the radar is not constant and the radar target is identified and validated by the air traffic controller, it does not need a flight check for MVA setting.



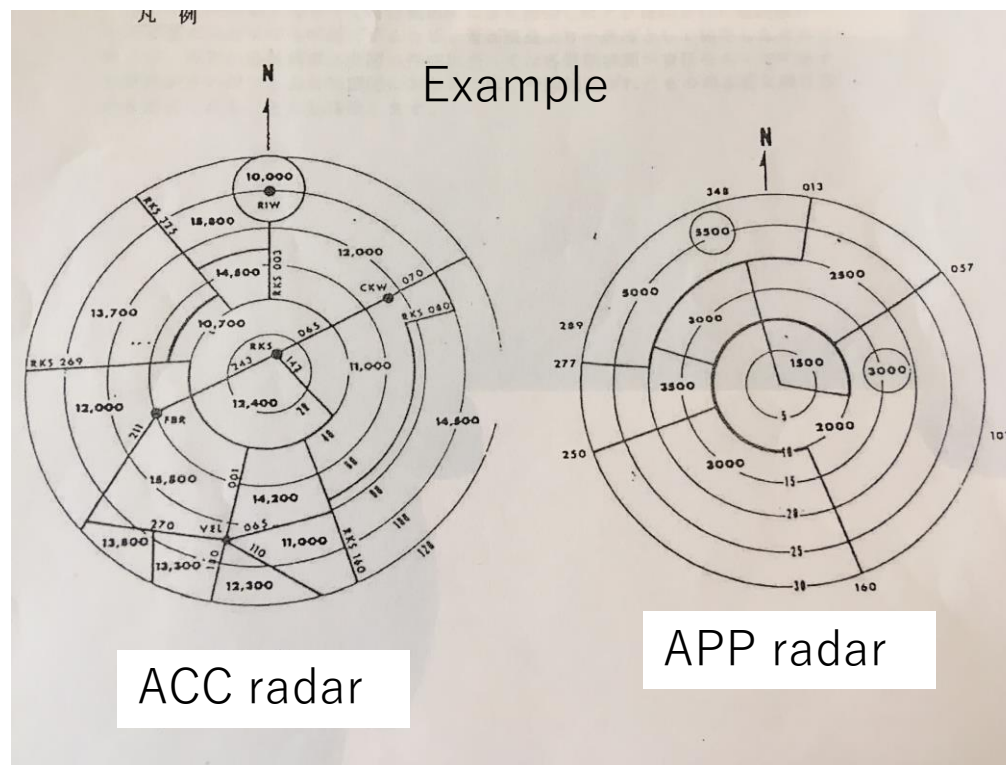
2. How to create MVA map

- (1) Match the center of the figure with the radar site. However, this is not the case when creating one MVA map for multiple radars.
- (2) The segment shall have the necessary and appropriate size for implementation of the radar control service. However, in an airspace having a single remarkable obstacle, it is possible to set a segment in which the obstacle is located so that the MVA of the segment does not become excessively high altitude due to the obstacle.
- (3) Make the outer edge of the segment as consistent as possible with the azimuth, distance or fix from the range mark, air safety wireless facility, aviation security wireless facility etc.
- (4) In determining segment MVA, consider errors of radar equipment.



2. Inspection of MVA map

In order to ensure its appropriateness, check the MVA map at least once a year and take necessary measures.



END



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OJT Instructor Training

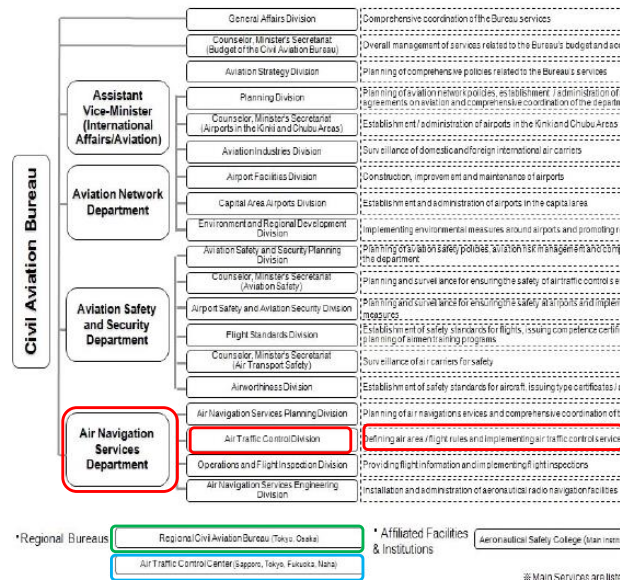
Hideo Watanabe
JICA Expert

Basic idea

1. Basic idea when supervising training
2. Roles of this HAND-BOOK
3. Definition of Words and Phrases

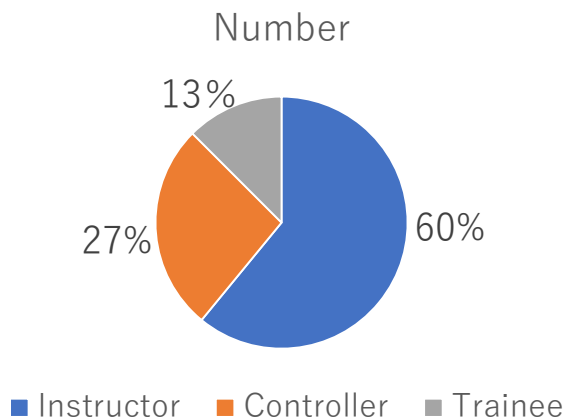
1. Basic idea when supervising training

- MLIT organization chart



Number of ATCO, instructor, trainee in Japan

ATCO: 1,920
Instructor: 1,170
Controller: 510
Trainee: 240



2. Object of this HAND-BOOK

	5 th ATC Service Implementation Regulation Training Implementation Procedure	OJT I Hand Book	Ideal Education & Training	Training Supervising Service Management Procedure
Job Title	Supervisor	Trainer Supervisor	Chief Controller Assistant Chief Controller Instructor Trainer Supervisor	Chief Controller Assistant Chief Controller Supervisor
Main Task	Supervising	Supervising Tutorship	Tutorship Management System (management of Training Team)	Management System (implementation of 6 phases of OJT)

3. Definition of Words and Phrases



Chapter 1

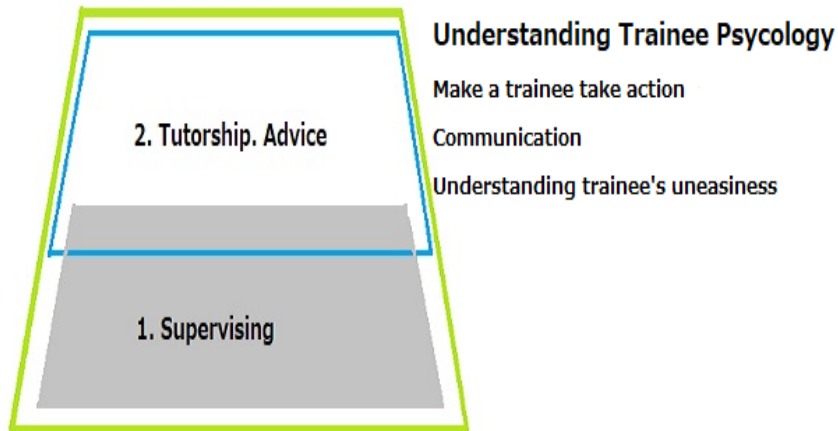
Supervising the Trainings

1. Supervising
2. Tutorship and advice
3. Understanding of the trainee's psychology

1. Supervising

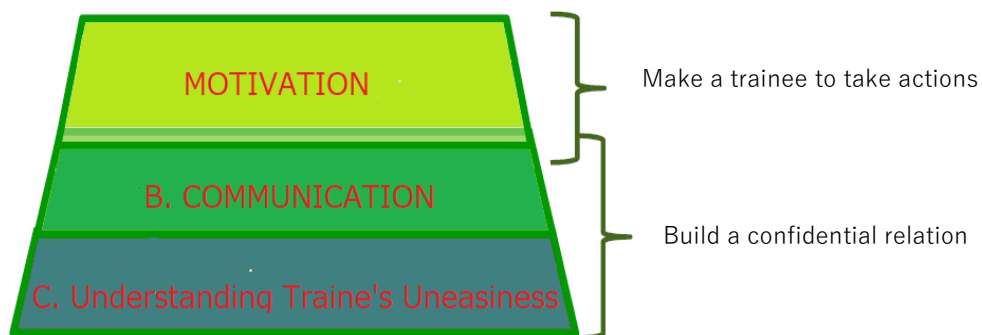
- Traffic situation
- Weather conditions
- Skill level of trainee
- Trainee's communication
- Coordination
- Safety or efficiency of the control

2. Tutorship and advice



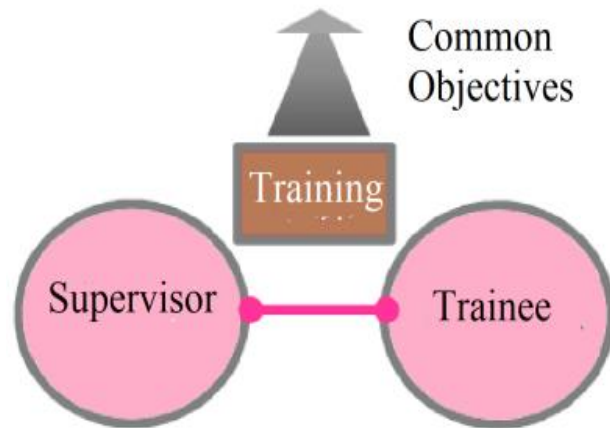
3. Understanding of the trainee's psychology

(2) Lead a trainee to take actions.



(1) Build a confidential relation.

With satisfactory confidential relation's, training will progress smoothly.



(1) Build a confidential relation

A) Recognize uneasiness of a trainee

1) Remember what you experienced

2) To understand the reason of the uneasiness

B) Communication

C) To maintain a good relations between a trainee and a supervisor

Summary of Establishing Confidential Relations

Three premises for the establishing confidential relation used as the foundation of communication

- Reconfirm trainee's uneasiness by remembering the fact that you yourself once were a trainee.
- Recognize the fact that a trainee and a supervisor are member of the project with same goals.
- Recognize that communication is required not only for a trainee but it also required for smooth supervising.



(2) Make a trainee to take actions.

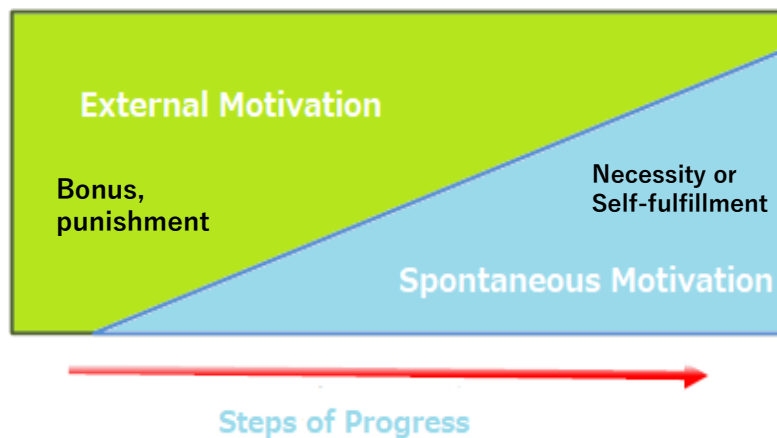
It may be useful to know the natural mental characteristic of human being for promotion of spontaneous action by trainee.

1)Motivation

2)Ability

3)Trigger

"Motivation" is the key for action



How to device smooth shift from Internal to Spontaneous

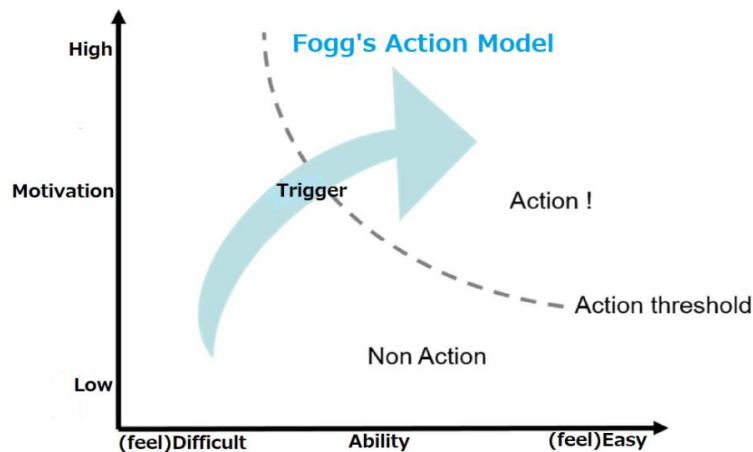
- The “ Convince” will trigger action
 - *Understand meaning and values of the task
 - *Get a lot of practical experience
 - *Get self-confidence and satisfaction
- The “Adequate Difference” trigger action
 - Ability (to cope with the task)
 - Trigger (action is called for)

Summary

In order to make one to take action, following three approaches are points.

- (1) Set up a goal/situation to increase motivation.
- (2) To increase ability That is, to make one feel that one can do the task by oneself.
- (3) Give trainee a supportive push forward by giving a trigger.

proper difference" triggers action.



Summary of Making a Trainee to Take Actions

Four hints to bring out trainee's action

- Help so that a trainee can convince the meaning and value of the task at hand.
- Explore what is the "relevant difference" for a trainee.
- Make the task seem easy for trainee.
- Give trainee a supportive push forward.

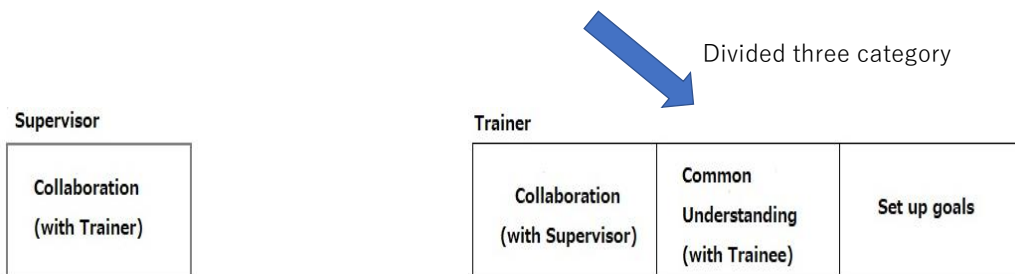
Chapter 2

Role of Trainer and Supervisor

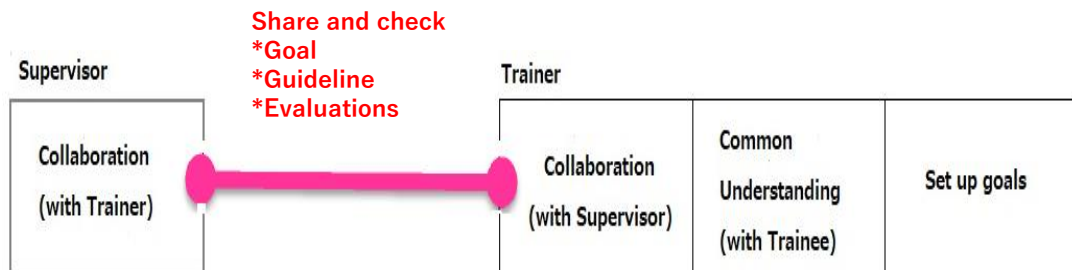
1. Relation between trainer and supervisor
2. Six phases of supervising a training (Initiation 3+OJT+Review2)
3. Two technics of OJT
4. Practical division of roles between trainer and supervisor

1. Relation between trainer and supervisor

Trainer plays an important role in the OJT training team centering on a trainee.



Relation between trainer and supervisor



2. Six phases of supervising a training (Initiation 3+OJT+Review2)

Divide "Supervising" along the time-axis.



the OJT period
and before and after the
OJT period.

2. Six phases of supervising a training (Initiation 3+OJT+Review2)

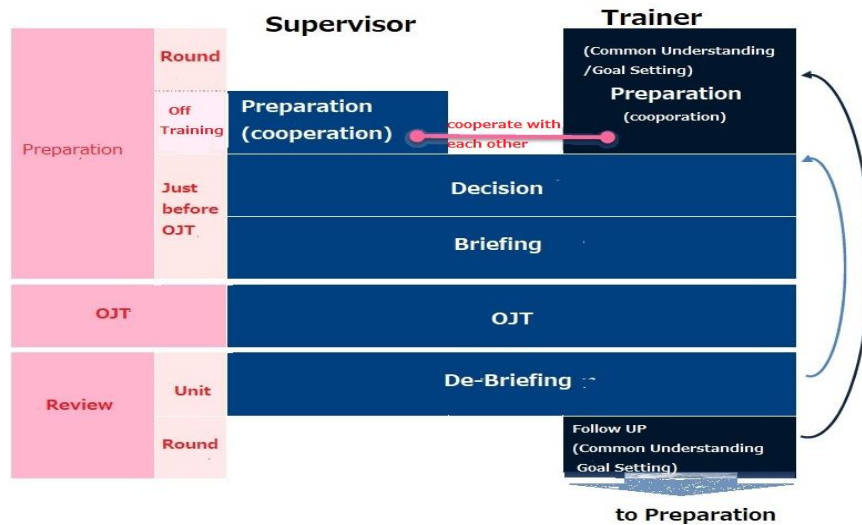
Initiation	Preparation	Check on Training Progress, Check on Trainee's State, Set up Goal, Confirmation on Target and Guideline among supervisors	
	Decision	Decision of starting OJT, Selection of the OJT Technique	
	Briefing	Reconfirmation of Progress, Setting specific OJT Goal	
OJT	OJT	Monitoring	(will describe at later section)
		Intervention	(will describe at later section)
Review	De-Briefing	Information sharing, trainee's Skill level, Tutorship and Advice given to the trainee (at the end of every training unit)	
	Follow-Up	Check on Training progress, Check on Trainee's State, Set up Goal (at the end of every training round)	

3. Two technics of OJT

Two important techniques for OJT, "Monitoring" and "Intervention"

OJT	OJT	Monitoring	Observation of a trainee's action, Monitoring reserve capacity, Skill level, Auxiliary Tutorship and Advicing
		Intervention	Correcting a trainee's action, Actions in place of trainee

4. Specific role sharing of Trainer and Supervisor



Chapter 3 Six phases of supervising a training

Chapter 3-1 Preparation

Chapter 3-2 OJT

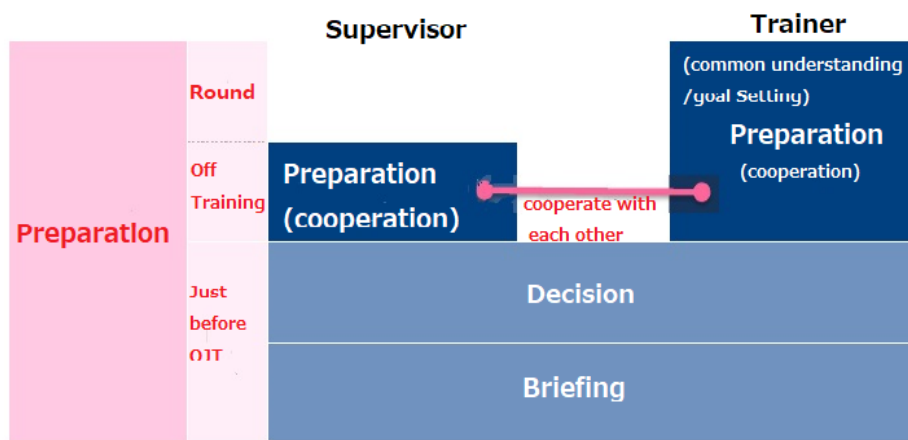
Chapter 3-3 Review

Chapter 3-1

Preparation

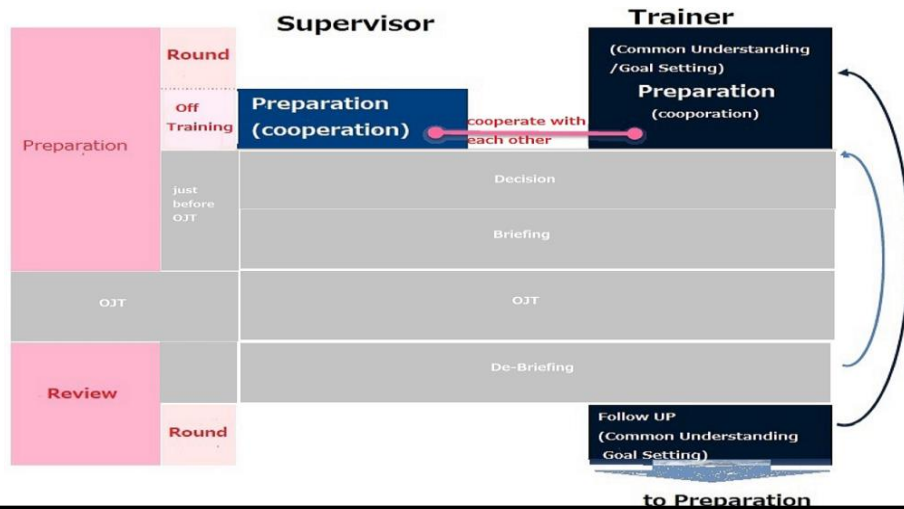
- I Follow-Up & Preparation [Including off OJT times]
- II Decision [just before OJT and during OJT] (as a Supervisor)
- III Briefing [just before the OJT] (as a Supervisor)

Preparation



I Follow-Up & Preparation [Including off OJT times]

"Trinity" of "Preparation" + "OJT" + "Review."



I Follow-Up & Preparation [Including off OJT times]

1. Objectives
2. Common understanding with trainee (As trainer in charge)
3. Daily information sharing (As a Trainer, and as a Supervisor)

1. Objectives

- (1) Exclude OJT under the environment which does not suit a trainee's skill level.
- (2) Set up suitable OJT goal.
- (3) Reduce the problems during the OJT resulting from a supervising.
- (4) Avoid irrelevant evaluation to a training by a trainee.
- (5) Heighten the training effect over each OJT.
- (6) Manage trainee's stress effectively.

<Exercise>

Among six supervising phases, in which PHASEs are these effects acquired by performing suitable "Follow-Up & Preparation"?

- (Since we are going to study about these six phases, you may not know.)

Preparation, Decision, Briefing, OJT(Monitoring, Intervention), De-Briefing, Follow-up

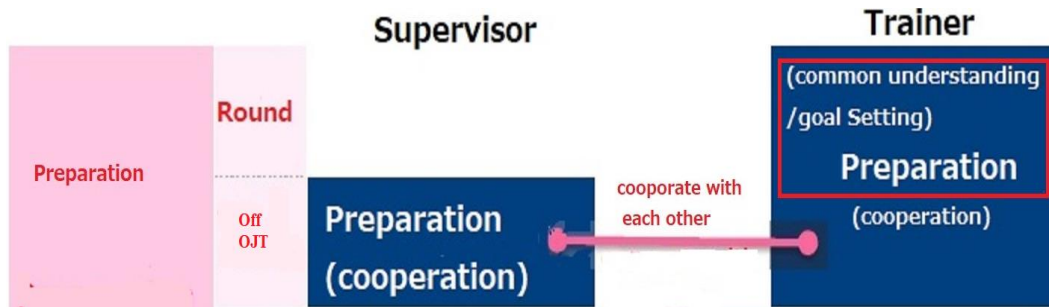
Follow-Up & Preparation and supervising phases

- (1) Exclude OJT under the environment which does not suit a trainee's skill level. →
- (2) Set up suitable OJT goal. →
- (3) Reduce the problems during the OJT resulting from a supervising. →
- (4) Avoid irrelevant evaluation to a training by a trainee.
→
- (5) Heighten the training effect over each OJT. →
- (6) Manage trainee's stress effectively. →

Follow-Up & Preparation and supervising phases

- (1) Exclude OJT under the environment which does not suit a trainee's skill level. → **Decision**
- (2) Set up suitable OJT goal. → **Briefing**
- (3) Reduce the problems during the OJT resulting from a supervising. → **OJT(Monitoring, Intervention)**
- (4) Avoid irrelevant evaluation to a training by a trainee.
→ **De-Briefing**
- (5) Heighten the training effect over each OJT. → **All phases**
- (6) Manage trainee's stress effectively. → **All phases**

2. Common understanding with trainee (As trainer in charge)



Make a trainee feel relaxed
(as trainer).



Grasp the progress situation of training (as a trainer)



I see you are focusing on the sequencing while doing other things.
Now let's review how much progress you made.

Remember the "each round Goal".



What was accomplished
or what was not yet
accomplished

Did any change take
place in matters other
than goals?

Keep in mind a bidirectional discussion.

When you ~ ~ ~, why did you do that

Why did you overlook ~~~?

Then, how do you act when you are in a same kind of situation again?



Grasp the condition of a trainee. (as a trainer)

the reason why you have to tackle this goal now

what kind of step awaits after clearing this step



Set up middle-term, long-term goal and the goal for every round



make it a habit to find out
importance to day by day,
unit by unit training

Goals which boost spontaneous motivation

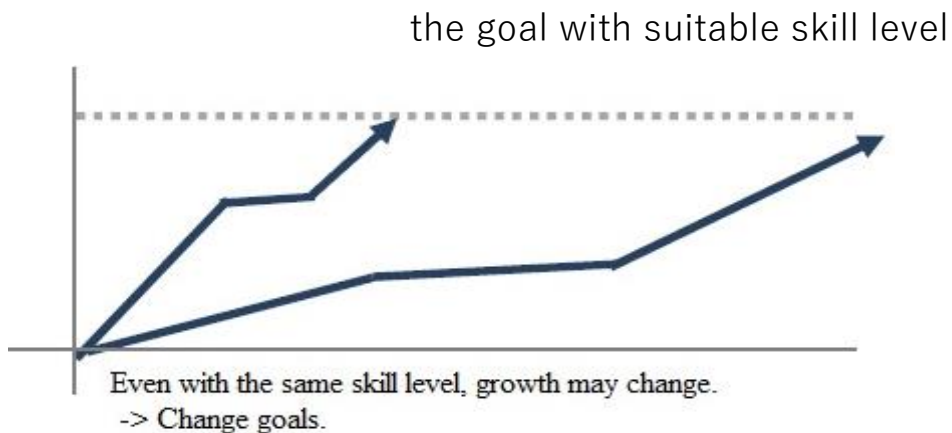


*By starting with a small number, trainee can concentrate and get used to small number juggling.



* With suitable level of load to increase, trainee can grow with motivation.

The goal relative to a growth rate



Give trainee a questioning opportunity (as a trainer).

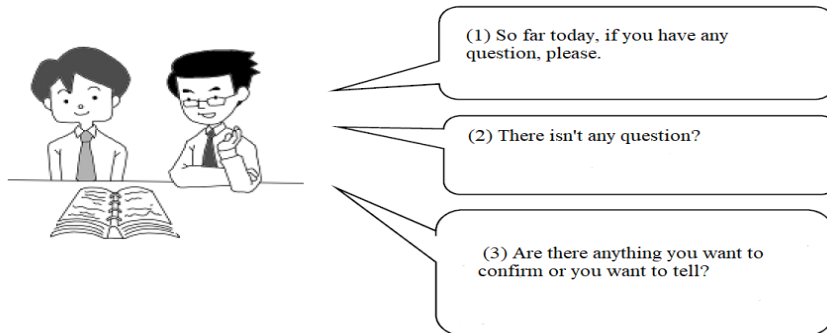
<Exercise>

For a trainee, among following three questions which one is easy to make?

And why is it?

- (1) So far today, if you have any question, please.
- (2) There isn't any question?
- (3) Are there anything you want to confirm or you want to tell?

Give trainee a questioning opportunity (as a trainer).



3. Daily information sharing (As a Trainer, and as a Supervisor)



Summary of Follow-Up & Preparation

Supervisor & Trainer

- Deepen an understanding about the training phases of the office and an assessment sheet.
- Utilize a written text so that you can express your opinion with convince.

Summary of Follow-Up & Preparation

Trainer

- First, ask a trainee's impressions about training of the round.
- Talk with a trainee positively evaluated points at the round.
- Talk with a trainee's shortage points at the round.
- Set up effectively middle and long-term goal, with a trainee.
- Collect evaluations from other supervisors and inform other supervisors a future goal and guideline.

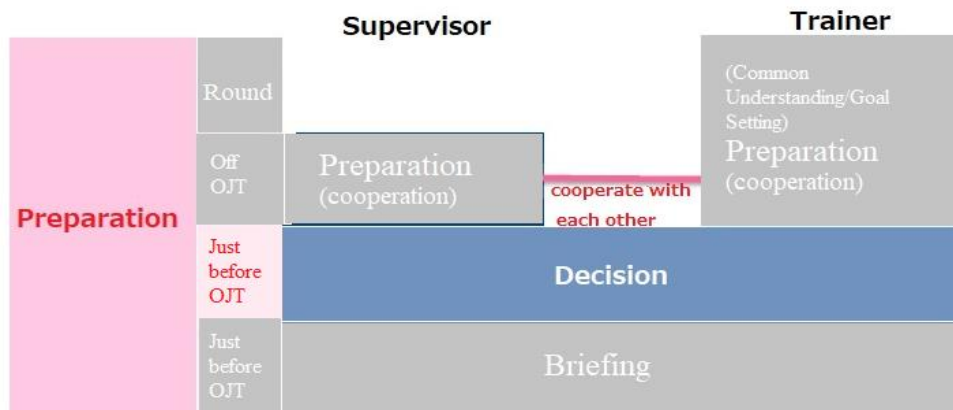
Summary of Follow-Up & Preparation

Supervisor

- Grasp the progress of training.
- Inform evaluation to the OJT training team.
- Make advises to the policy of an OJT training team and make it develop

II Decision [just before OJT and during OJT] (as a Supervisor)

"Decision" is a phase which compares the progress and the operational situation of ATC, judges whether to start OJT or not, and chooses the OJT technique just before OJT.



1. Objectives

Series of flows of "Grasp training progress
->Decision" are phases indispensable in order to ensure "supervising."

Ensure
"Supervising"

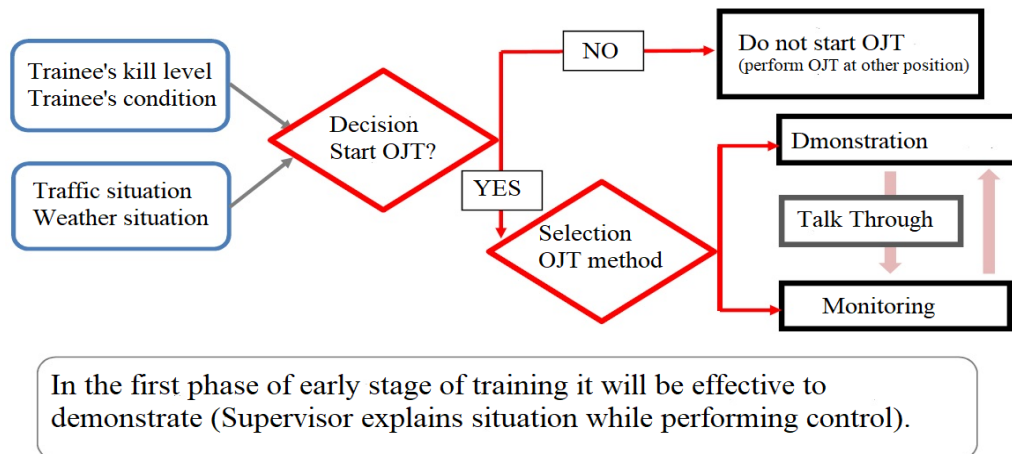


2. Decision to start OJT and selection of OJT techniques

In order to boost a spontaneous motivation

- Skill and consciousness will improve effectively by making success experience step by step.
- Selection of a training environment is also a tool of motivation

Decision of start OJT. Selection of OJT enforcement technique.



<Exercise>

For example, are the following selections appropriate? Let's think together.

- 1) At first supervisor was monitoring, but as the traffic increased the trainee tend to mistook call signs. Then supervisor made "Intervention".
- 2) Then, the supervisor controlled the traffic for a while.
- 3) Since the traffic flow resumed normal, supervisor returned the control to the trainee and started OJT again under monitoring. However, the traffic was still too heavy for trainee, he could hardly issue permission or instructions and was unable to have his way with the traffic.

1) At first supervisor was monitoring, but as the traffic increased the trainee tend to mistook call signs. Then supervisor made "Intervention".

It would be better if the increase of the traffic was correctly predicted at the start of the OJT.

2) Then, the supervisor controlled the traffic for a while.

With the increase in traffic, without bulled through the monitoring but shifted to the "Demonstration" is appraisable.

3) Since the traffic flow resumed normal, supervisor returned the control to the trainee and started OJT again under monitoring. However, the traffic was still too heavy for trainee, he could hardly issue permission or instructions and was unable to have his way with the traffic.

It is quite likely that the calm traffic situation for a supervisor is too many for a trainee. Moreover, trainee might be bit frightened and disturbed after the intervention. When returning to monitoring, let's do it without getting impatient.

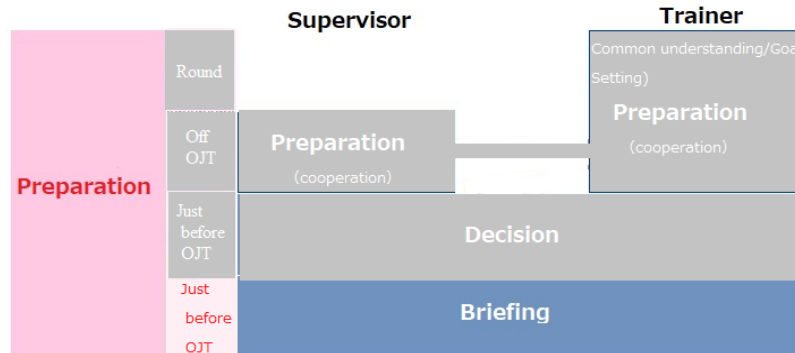
Summary of Decision

"Decision" which the supervisor is performing automatically is an important phase. There are **three points** in it.

- After comparing the progress of training and the operational situation, judge the start of OJT and select OJT technique.
- Supervisor should recognize it as a phase required in order to carry out a supervising certainly.
- Supervisor should recognize that the OJT environment also affects a trainee's motivation.

III Briefing [just before the OJT] (as a Supervisor)

it is necessary to stick to the point in a short time



1. Objective

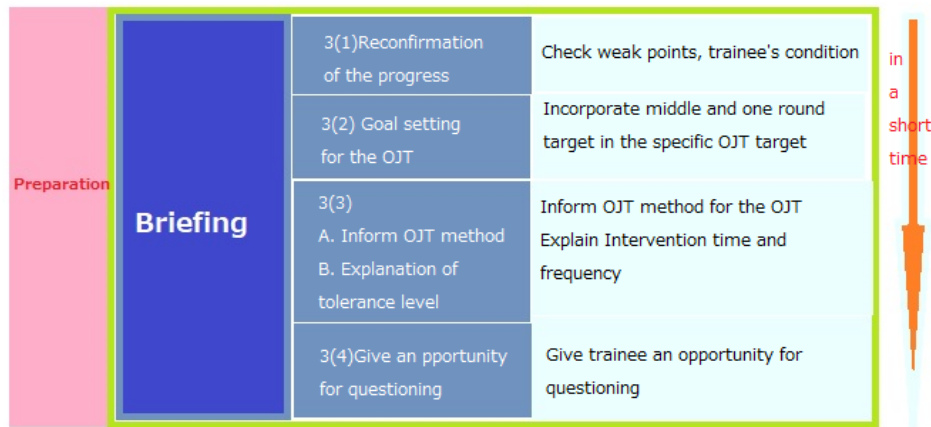
For a supervisor

- Supervisor directly confirm with a trainee about the information concerning OJT.
- Supervisor set up the specific goal focused on the OJT.

For a trainee

- Given opportunity to settle small questions
- Supervisor can make OJT more meaningful

2. Don't give a trainee the negative psychological pressure.



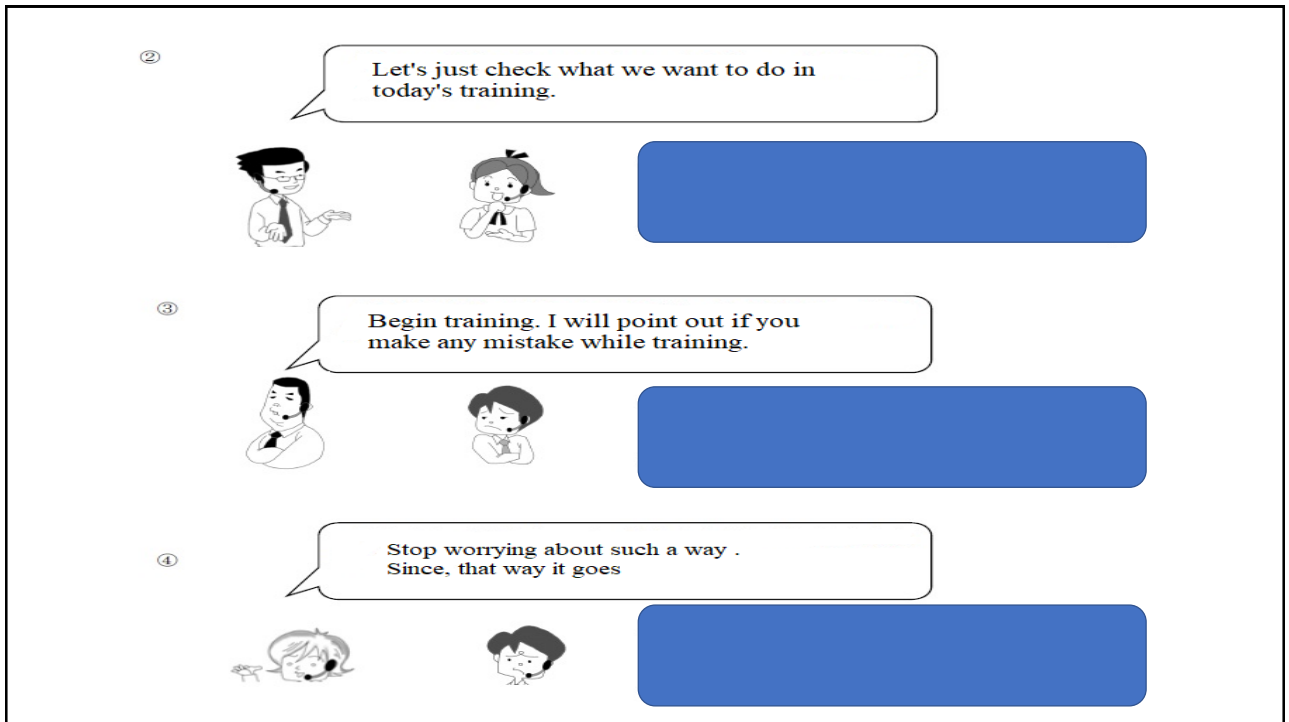
<Exercise>

What kind of influence does the following language have on a trainee's psychology?

①

You fail last time, didn't you? Don't fail today.





3. Final check with trainee

(1) Reconfirmation of progress

- a. Check focusing on a trainee's weak point.
- b. Check trainee's experience in the same operational situation.
- c. Check on the changes of prediction of a future operational situation.
- d. Take one more step forward and check about today's condition or the latest state of mind of trainee.

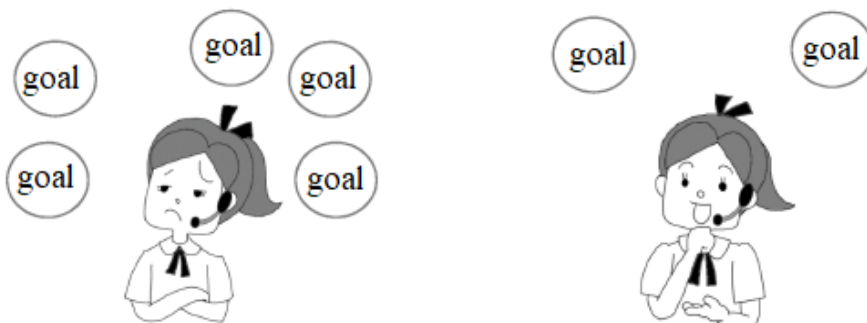
Reconfirmation of progress

When did you control this type of approach last?



3. Final check with trainee

(2) Goal setting in the OJT concerned



you should limit the goal to about **three** at the most.

3. Final check with trainee

(3)Explanation of transfer and tolerance level of the OJT technique

- a. Tell OJT technique to the trainee
- b. Explanation of tolerance level

(4)Give a questioning opportunity

it is necessary to give a questioning opportunity to a trainee with suitable frequency.

Summary of Briefing

Five Briefing points (must briefed in a short time)

- Don't give a trainee negative psychology pressure.
- Reconfirm progress focusing on a trainee's weak points.
- Set up the goals (limiting the number) for the OJT concerned.
- Tell OJT technique to a trainee.
- Explain the timing of Cut-In, and the frequency of interferences to a trainee.

Chapter 3-2

On the Job Training

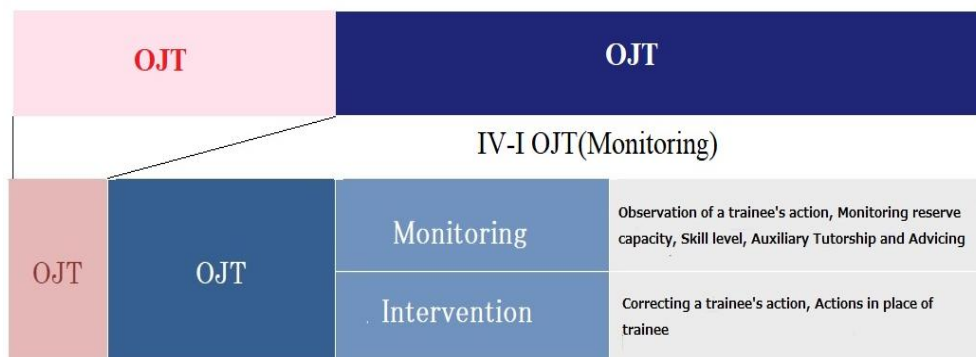
IV-I OJT (Monitoring) (as a Supervisor)

IV-II OJT (Demonstration, Talk Through) (as a Supervisor)

IV-III OJT (Intervention) (as a supervisor)

On the Job Training

the supervisor always must recognize the priority sequence of the task to carry out.



IV-I OJT (Monitoring) (as a Supervisor)

1. Objective
2. Supervisor's responsibility
3. Pressure on trainee
4. Basics for monitoring
5. Ensure a supervising process.
6. Evaluate trainee's skill level.
7. Auxiliary tutorship and advice

1. Objective

Supervisor is expected to act always remembering an original objective.



2. Load on Supervisor

What is task concerning Supervisor?

Lay out a supervisor's own plan for the traffic.
 Grasp the skill level by observing a trainee's behavior.
 Perceive and check the motivation of trainee's behavior.
 Correct a trainee's behavior.
 Correct supervisor's own planning by the result of a trainee's reaction
 Supervise and predict traffic and weather situation.
 Supervise and predict a trainee's remaining power.
 Supervise and predict a supervisor's own remaining power.
 Consider suspension/break of OJT or change of the OJT method.
 Perform tutorship and advice whenever possible.



3. Load on trainee

How to maximize trainee's consciousness domain

Intervention, advice and
 tutorship from supervisor



Handling traffic

4. Basics for Monitoring

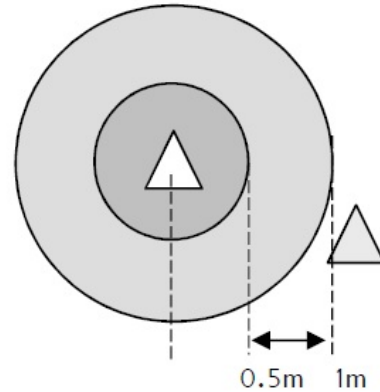
relatives, family member,
sweetheart



very intimate friends

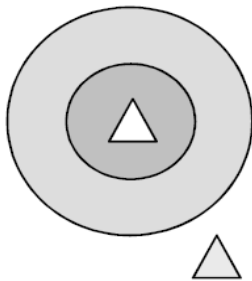


staff member of the
office

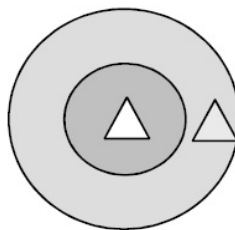


supervisor is "the staff member of the office"

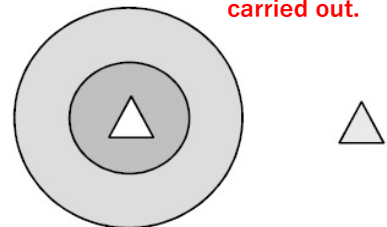
(1) A supervisor's positioning



confident and a responsible



in the trainee's eye sight



The supervising in other seat

(2) Record of OJT

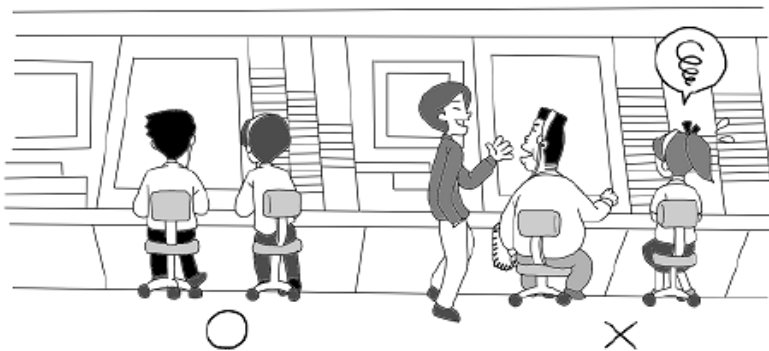
How about utilizing characters and simple figures?

- a. Make precise record on "what was able to do" and "what was not able to do"
- b. Put degree of importance down with the record.



(3) Prohibited matters

"Neglect" is not observing the trainee' behavior.



you should recognize that from the safety point of view "neglect" is an act of high risk.

The following can be mentioned as the cause of the incident during the OJT.

- 1) The supervisor did not grasp the progress of training.
- 2) OJT I carried out under the operational situation which does not match of progress of training.
- 3) The supervisor had neglected the surveillance and prediction after an OJT had started.

The following can be mentioned as the cause of the incident during the OJT.

- 4) A trainee did not spoke out that he was (traffic was) nearing at his ability limit.
- 5) The supervisor overestimated or was indifferent to the trainee and had left him a free hand.
- 6) Supervisor became absorbed in a tutorship and advice and he was not hearing communication.

<Exercise>

What measures in the phases are most effective countermeasure?

Cause of the incident and a countermeasure

- 1) The supervisor did not grasp the progress of training.
→ **Preparation & Follow Up, Briefing**
- 2) OJT I carried out under the operational situation which does not match of progress of training.
→ **Preparation & Follow Up, Decision**
- 3) The supervisor had neglected the surveillance and prediction after an OJT had started.
→ **Decision, OJT(Monitoring, Intervention)**

Cause of the incident and a countermeasure

4) A trainee did not spoke out that he was (traffic was) nearing at his ability limit.

→ **Omit**

5) The supervisor overestimated or was indifferent to the trainee and had left him a free hand.

→ **Preparation & Follow Up, OJT(Monitoring , Intervention)**

(6) Supervisor became absorbed in a tutorship and advice and he was not hearing communication.

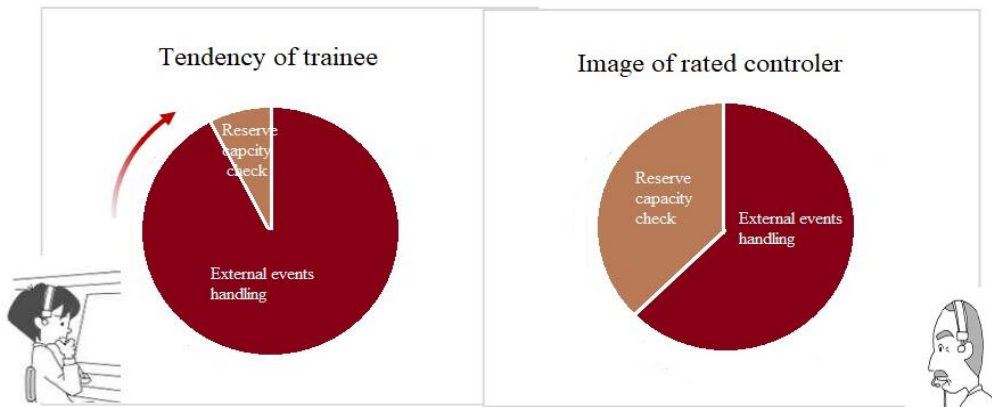
→ **OJT(Monitoring , Intervention)**

(2) A supervisor considers the acceptable limits of the safety for himself.

- the supervisor must always being conscious of his own acceptable limits of safety.
- the sole indicator common to all supervisors, but you must recognize that there are different acceptable limits among people

(3) Supervise and predict a trainee's remaining power.

You must not leave a trainee's capacity management only to the trainee.



(3) Supervise and predict a trainee's remaining power

a. The technique to check remaining capacity for external events.

- How do you sequence arriving traffic? (Ask planning)
- What worries you now? (Are there any lacking points?)

b. The technique of recovering the check capability of "self-reserved capacity".

- Make him breathe deeply.
- Make him exercise light stretch.
- "Now concentrate on the traffic." (Suggests change)

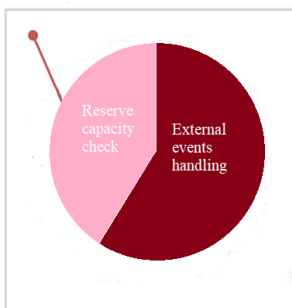
(3) Supervise and predict a trainee's remaining power

Before making an abruptly intervention, you should check a **trainee's state of mind** first.

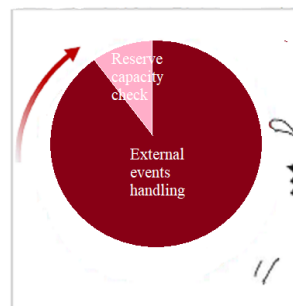
(4) Check and predict a supervisor's own reserved capacity.

Supervisor must check his own reserved capacity.

A reserved capacity portion serves as a watchdog and you can monitor the amount of your loads.



If a reserved capacity portion decreases, you check capacity for load factor also decreases. As a result you load increase with accelerating tempo



6. Grasping of trainee's skill level

What goals are attained and what goals are not yet attained.

- Among goals, what were become able to do or not able to do ?
- Did anything change about matters other than goals?

7. Auxiliary Tutorship and Advice

(1) Compatibility with a supervising

- During the OJT, give priority to a supervising over a tutorship and advice.

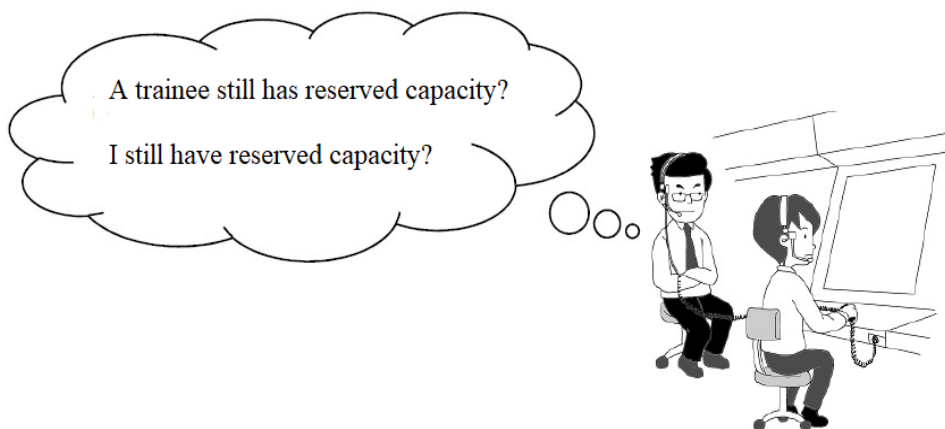
(2) Add strength according to the degree of importance.

- The supervisor should talk clarifying the difference according to the subjects (strong/moderate instruction or just an advice).

Summary of Monitoring

Six essential points for both trainee and supervisor who are under heavy load situation.

- When grasping skill level, don't depend on memory only, but utilize record with characters or figures.
- Don't neglect nor indifferent to the trainee by any means.
- A supervisor considers his own capacity limits for safety.
- Check reserved-capacity for both a trainee and a supervisor.
- Tutorship and the advice are not necessary done during the OJT. Supervisor should recognize that priority is in "Supervising".
- When making tutorship and advice, add stress according to the degree of importance



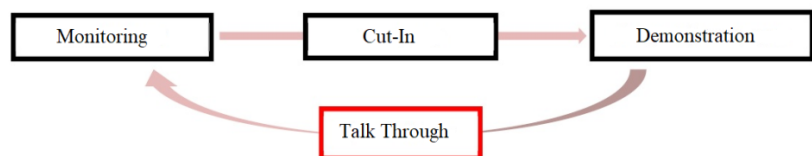
IV-II OJT (Demonstration, Talk Through) (as a Supervisor)

1. Objective
2. Points to be noted

1. Objective

The objective of Demonstration and Talk Through is to make subsequent shifts to the Monitoring smoothly, by checking trainee's prediction and planning level.

Demonstration	Talk Through
Supervisor judges.	Trainee judges.
Supervisor communicates	Supervisor communicates.
<ul style="list-style-type: none"> *Carry out explaining reason why. *Ask questions and make a trainee participate. 	<ul style="list-style-type: none"> *Accept minor deviation in directions. *Carry out explaining reason why.
<ul style="list-style-type: none"> *Early stage of training *Under rare situation *When the trainee is facing with elementary problems 	<ul style="list-style-type: none"> *When returning to Monitoring, after Cut-In and following control by supervisor. *When shifting Demonstration to Monitoring



2. Points to be noted

Talk Through

ANA54, Report Speed

Needs 5NM, make
ANA54 Report Speed



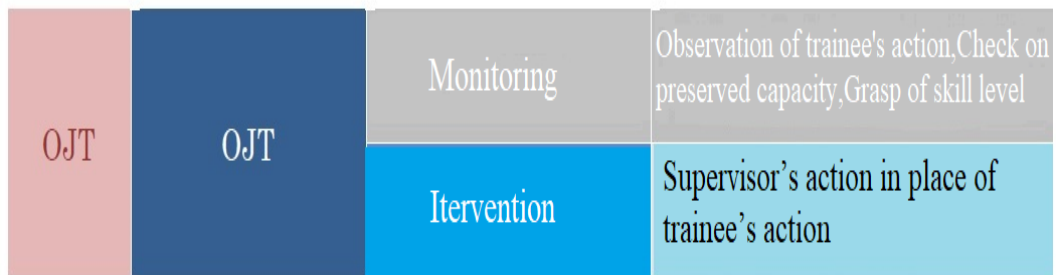
- Carry out under light traffic.
- Considering the situation.
- "Talk Through" is to delegate control to a trainee eventually

IV-III OJT (Intervention) (as a supervisor)

1. Objective
2. Two types of Intervention
3. Acceptable level for Supervisor himself
4. Cut-In Technic
5. Traps during OJT
6. Unnecessary Intervention.
7. How to resume monitoring after Cut-In

1. Objective

Intervention is an act of securing safety or act of securing efficiency within a warranty of good safety.



2. Kind of Interventions

(1) Cut-In



(So far now)
I will take control for a while.. just
watch carefully.

2. Kind of Interventions

(2) Other than Cut-In



This over flight is about to cross the boundary. Hand-off, please.

Cut-In which lowers a trainee's load



Now let me speak just this second
All Nippon..
Ok. now you have..

3. Acceptable limits for oneself

- You have to prepare your own judgement criteria.
- The supervisor has to always being conscious of his own acceptable limits.

4. "Cut-In" Technique

(1) Cut-In for threatening situation like Red CNF, CA, etc.

- In such a threatening situation, it is extremely risky to miss the timing. On the other hand there is almost no merit you can get by just waiting.

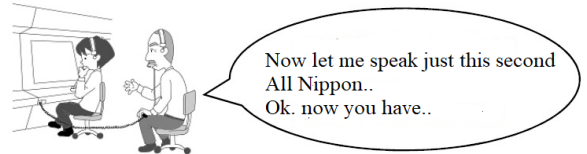
(2) Cut-In due to a communicational discrepancy

- "*Cut-In*" may get across to a pilot.

4. "Cut-In" Technique

(3) Cut-In which lowers a trainee's load

- You should utilize Cut-In, not only for correction but also for recovering preserved-capacity.



(4) Cut-In for protecting a supervisor's reserved-capacity

- The supervisor is facing many tasks during the OJT.
- you should not mind the trainee nor controllers around you.

5. Trap during the OJT

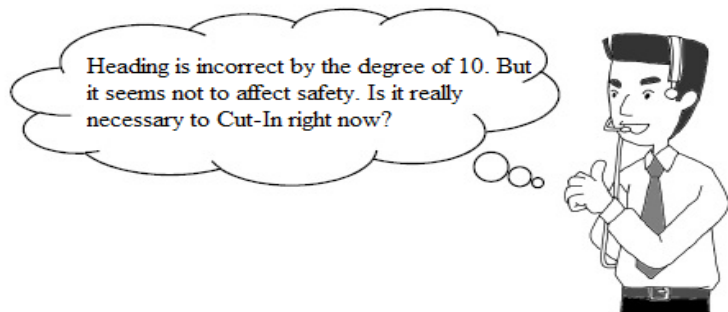
During the OJT, problems may occur because of the causes which cannot happen when you are controlling by yourself.

A misrecognition since traffic is handled by two person



6. "Intervention" without necessity

"What are the important matters and what are the auxiliary matters."



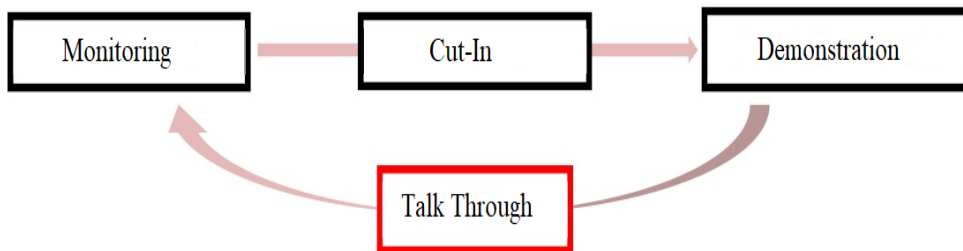
7. Resume Monitoring after Cut-In

A supervisor should return to Monitoring, after discerning well whether the trainee understands the traffic situation.

Demonstration	Talk Through
Supervisor judges.	Trainee judges.
Supervisor communicates	Supervisor communicates.
*Carry out explaining reason why. *Ask questions and make a trainee participate.	*Accept minor deviation in directions. *Carry out explaining reason why.
*Early stage of training *Under rare situation *When the trainee is facing with elementary problems	*When returning to Monitoring, after Cut-In and following control by supervisor. *When shifting Demonstration to Monitoring

7. Resume Monitoring after Cut-In

"Talk Through" has an effect by which supervisor can confirm how well the trainees can visualize his own future training plan.



Summary of Intervention

Five points for giving priority to securing safety

- What is my standard for "Cut-In" ?
- For threatening situation like Red CNF, CA, etc. Cut in immediately.
- Recognize the incidents which likely happen during the OJT.
- Recognize that too much intervention may have harmful effects on progress of training.
- When resume Monitoring after Cut-In, it should be done after making a trainee well understand traffic situation.

Chapter 3-3

Review

De-briefing [at a training unit] (as a supervisor)
 VI Follow-Up & Preparation [including off OJT] (as a trainer, as a supervisor)

Review

supervising is the Trinity of "Preparation+OJT+Review"



De-briefing [at a training unit] (as a supervisor)

1. Objective
2. Transfer of evaluation, and effective Tutorship and Advice

1. Objective

The objective is to enlarge the effect of the OJT by notifying to a trainee about the evaluation to the goal of the OJT concerned.



2. Transfer of evaluation, and effective Tutorship and Advice

(1) Ask a trainee his impressions.

- First of all, supervisor let a trainee speak about the impressions of the OJT.

(2) Talk about positively evaluable points.

- the supervisor must talk about the positively evaluable points during the OJT.



2. Transfer of evaluation, and effective Tutorship and Advice

(3) Speak about shortage points and new subjects.

a. Remember the matter which was a goal of the OJT concerned.

- Supervisor should be conscious of whether the shortage points were within the limits of the goal shared in advance, or not included in the goal.

b. Talk mainly about future tasks.

- you can talk with a trainee.

c. Add stress according to the degree of importance

- You should clearly specify which one has a greater importance a "Tutorship" or an "Advice".

Add stress according to the degree of importance

Do ~~~. Because it is more effective
(Tutorship)



This is just an advice. Why don't you ~~~
(Advice)

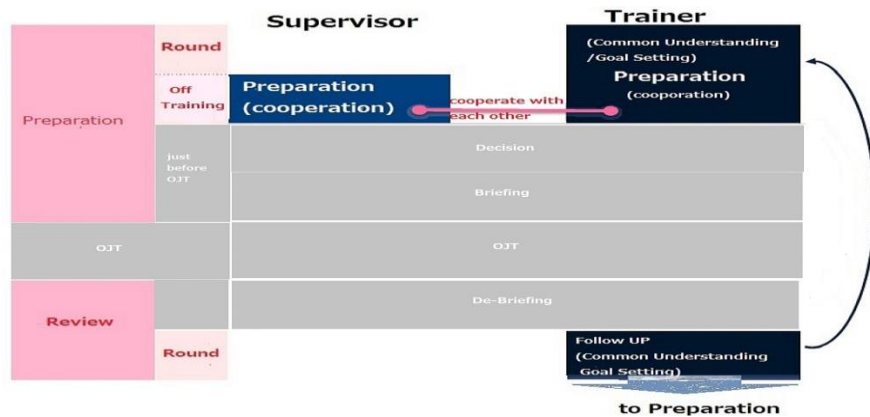
Debriefing summary

Five points for enlarging the effect of OJT

- First a supervisor should start with asking a trainee about impressions of the OJT.
- Tell positively evaluable points in the OJT.
- With goals of the OJT in mind, tell shortage points.
- In order to make future training more effective, keep a bidirectional dialog in mind.
- Carry out "Tutorship" and "Advice" according to the degree of importance.

VI Follow-Up & Preparation [including off OJT] (as a trainer, as a supervisor)

Like Debriefing, the trainer should not stop at reflecting on the past but should focus on the subjects which they can do now for the future.



Knowledge and skill required for supervisor.

Flow in a Round	Required Knowledge and Skill for Training Supervising	
Understanding Of Trainee's Psychology	Recognize the fact that a trainee and a supervisor are member of the project with same goals.	
	Reconfirm trainee's uneasiness by remembering the fact that you yourself once were a trainee.	
	Recognize that communication is required not only for a trainee but it also required for smooth supervising.	
	Help so that a trainee can convince the meaning and value of the task at hand.	
	Explore what is the "relevant difference" for a trainee.	
	Make the task seem easy for trainee.	
	Give trainee a supportive push forward.	

Knowledge and skill required for supervisor

Flow in a Round	Required Knowledge and Skill for Training Supervising	
Preparation & Follow Up	[Supervisor & Trainer]	
	Deepen an understanding about the training phases of the office and an assessment sheet.	
	Utilize a written text so that you can express your opinion with convince.	
	[Trainer]	
	First, ask a trainee's impressions about training of the round.	
	Collect evaluations from other supervisors and inform other supervisors a future goal and guideline.	
	[Trainer & Trainee]	
	Talk about positively evaluable points at the round.	
	Talk about shortage points at the round.	
	Set up effectively middle and long-term goal.	
	[Supervisor]	
	Grasp progress of training by getting information from OJT, communication with other supervisor, evaluation sheets.	
	Inform OJT training team evaluation of the training.	
	Make advises to the policy of OJT training team and make it develop.	

Knowledge and skill required for supervisor

Flow in a Unit	Required Knowledge and Skill for Training Supervising	
Decision	After comparing the progress of training and the operational situation, judge the start of OJT and select OJT technique.	
	Supervisor should recognize it as a phase required in order to carry out a supervising certainly.	
	Supervisor should recognize that the OJT environment also affects a trainee's motivation.	
Flow in a Unit	Required Knowledge and Skill for Training Supervising	
Briefing	Don't give a trainee negative psychology pressure.	
	Orally confirm necessary points in a following subjects, a trainee's weak points, experience of the same situation, prediction of the situation or physical condition and psychological condition of the day.	
	Set up priority goals for the OJT specifically.	
	Inform trainee OJT technique. (Monitoring, Talk Through, Demonstration)	
	Explain the timing of Cut-In, and the frequency of other interferences to a trainee.	

Knowledge and skill required for supervisor

Flow in a Unit	Required Knowledge and Skill for Training Supervising	
Debriefing	First a supervisor should starts with asking a trainee about impressions of the OJT.	
	Tell positively evaluable points in the OJT.	
	With goals of the OJT in mind, tell shortage points.	
	* In order to make future training more effective, keep a bidirectional dialog in mind.	
	Carry out "Tutorship" and "Advice" according to the degree of importance.	
Flow in a Round	Required Knowledge and Skill for Training Supervising	
Preparation & Follow Up	(above mentioned)	

OJT- I Pocket Checklist

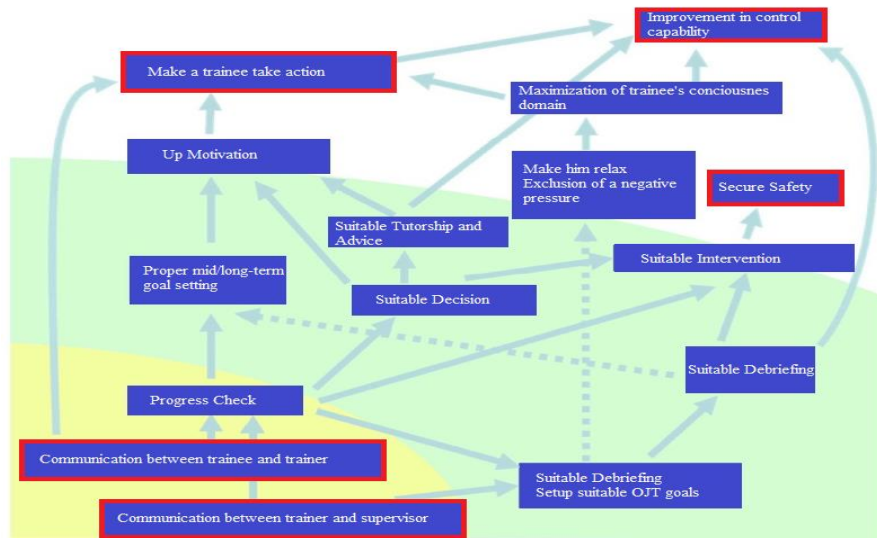
Decision

- ☐ After comparing the progress of training and the operational situation, judge whether to start OJT and select OJT technique.
- ☐ Supervisor should recognize it as a phase required to carry out a supervising certainly.
- ☐ Supervisor should recognize that the OJT environment also affects a trainee's motivation.

Briefing

- ☐ Don't give a trainee negative psychology pressure.
- ☐ Reconfirm progress focusing on trainee's shortage points.
- ☐ Set up priority goals for the OJT specifically.
- ☐ Inform a trainee OJT technique. (Monitoring, Talk Through, Demonstration)
- ☐ To the trainee, explain Cut-In timing, and the frequency of other interferences.

Whole Image of Supervising Training



DAY 3 Exercise

1. Knowledge and skill required for supervisor----
2. Distracted by a trainee's way of----
3. This incident happened at the early stage of training---
4. They felt kind of relief since training was at final stage, but the relief backfired on them. ----

1. Forget oneself in teaching...

- The supervisor who has noticed the misdirection in the trainee's instruction said "No!".
- The trainee responded immediately, instructing "Disregard" to pilot.
- Immediately after the trainee said "Disregard", supervisor began oral tutorship to the trainee on the spot.
- But the trainee's intention of cancellation by "Disregard." did not get across to the pilot.
- Both supervisor and a trainee did not notice that the pilot's read back was incorrect.
- And with the misdirection by trainee, the pilot end up in "near miss" with other aircraft.

Forget oneself in teaching

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

2. Distracted by a trainee's way of ---

- The trainee instructed descent to 3000 ft. to the aircraft establishing initial communication
- Before aircraft A, the trainee was instructed aircraft B to climb to 3000 ft., but he had forgotten this. Although the supervisor recognized existence of aircraft B, he was distracted by the trainee's way of arranging strips (It was different from supervisor's arrangements.) and failed to recognize climbing aircraft B.
- Both aircraft gradually approached each other unnoticed by trainee nor supervisor.
- Although evasive direction was issued, the pilot fail to acknowledge this in a single transmission. Both aircraft executed evasive maneuver following the TCAS warning.

Distracted by a trainee's way of --

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

3.This incident happened at the early stage of training--

- For the trainee the position was his first training seat and it was only one month since the training started.
- The supervisor did not fully grasped neither a trainee's training record nor his skill level.
- Aircraft A was climbing to FL260. Aircraft B was at FL350.
- Routes for air craft A and B crosses each other. The trainee judged from the climb rate of air craft A , that A can climb through the FL350 with ample separation. The trainee issued continue climb clearance to aircraft A. Aircraft A's climb rate was decreased as she climbed. As the result aircraft A and B were fell into a near-miss situation.

This incident happened at the early stage of training--

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

4. They felted kind of relief since training was at final stage, but the relief backfired on them. -- -

- A trainee was at the final stage of training and was expecting the recommendation meeting at the end of the month.
- The supervisor also recognized the skill level of training correctly.
- The trainee was at busy local seat. He issued landing clearance to arrival aircraft.
- Then departure aircraft called up. The trainee instructed to the aircraft to hold short of runway.
- The supervisor had trusted the trainee completely and was not monitoring communication intently.
- The departure pilot replied “????”, but he crossed the stop line and taxied into the runway. *Both a trainee and a supervisor did not notice this. As a result arrival aircraft executed go around by his own accord

They felted kind of relief since training was at final stage, but the relief backfired on them. -- -

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

KO-KU-SEI-No.200

28th July 1916

THE



HAND BOOK

For a more practical and more effective training supervising

(For instructors)

Civil Aviation Bureau

Air Navigation Service Department

Air Traffic Control Division

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Chapter 3 Six phases of supervising a training

Chapter 3-1 Preparation

I Follow-Up & Preparation [Including off OJT times]

(As a Trainer, and as a Supervisor)

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Chapter 3-2 OJT

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2. Notes

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Basic idea

1. Basic ideas for supervising ATC training.

I presume, most of the readers of this "HAND BOOK" are training supervisor or are going to be appointed as a training supervisor. (Henceforth referred as "supervisor") As provided in the 4th clause of the 9th article of an Air Traffic Control Personnel Examination Regulation, a supervisor is appointed by the Head of the Civil Aviation Bureau, or the Head of the Regional Civil Aviation Bureau as those who perform supervising, tutoring and advising a trainee at the OJT. What does it mean to be appointed by the Head of the Civil Aviation Bureau, or the Head of the Regional Civil Aviation Bureau?

Fostering trainees should be a business of the whole organization, and each supervisor must address to training with fully understanding of the contents of "Ideal Education and Training of Air Traffic Controller", and the training frame work of his/her office.

If a supervisor appointed by the head of the Civil Aviation Bureau or the head of the Regional Civil Aviation Bureau is being indifferent to the training, it is an attitude fall far short of ideal. Even if a trainee has some problems to be solved, as a supervisor, you have to at least have some interest in training. Although sometimes getting "interested in" demands strenuous efforts but just this serves as a foundation of fostering a trainee.

A supervisor accept the feedback from the others and has to turn the cycle of an improvement while he himself study his supervising from an objective perspective It is same with the daily control business, to utilize daily reflection to improve control next time.

As you might know the coverage of the section of this hand book, as the specific technique of supervising a training, "Initiation" (Initiation, decision, briefing) before beginning OJT is most important. It is not an overstatement saying Initiation holds the key to success of supervising a training.

Now, not only a supervisor but also a trainee's efforts are indispensable to training. A supervisor and a trainee are both project members who jointly progress toward the same goal. It should be recognized their relations are "FLAT" one. Since it is a flat relationship, in order to progress training more effectively, sharing information and seek better policy is natural way of doing training.

Now, based on the knowledge of definition and explanation of words and phrases of this hand book, let's learn about the specific technique of a supervising a training after deepening an understanding about the supervising and roles of a supervisor and trainer.

2. Roles of this Handbook.

This handbook will set a guideline for specific technique to materialize effectively the contents prescribed in "Ideal Education and Training of Air Traffic Controller" and "Aeronautical Safety Service Implementation Regulation5, VII Training Implementation Procedure".

A) The word "**must**" means an indispensable matter.

B) The phrase "**must not** " means a prohibited matter.

C) The word "**required**", "**necessary (need)**", "**should/should not**", "**recommended**", "**called for**", "**expected**" are used when describing about goal(s)..

D) The words "advice" means suggestion matter.

E) The word "I can" means some possibility.

F) The word "may", "probably" means a hypothesis, an assumption matter, a guess, or a proposal matter.

G) The word "first of all" means theoretical instruction.

Words selection for A, B and C should not based on personal preference. Use of the predefined word is to seek a training objectives effectively as an organization by sharing common understanding. About A and B,

For A and B, the contents provided in the "5th ATC Regulation VII Training Implementation Procedure" are included in these items, and it "**must/must not**" be practiced. For item C, it is not necessary mandate, but each supervisor **should** practice them as much as possible, and expected to take actions to improve.

(Ref.) Figure 4 Related documents about Supervising Training"

	5 th ATC Service Implementation Regulation Training Implementation Procedure	OJT I Hand Book	Ideal Education & Training	Training Supervising Service Management Procedure
Job Title	Supervisor	Trainer Supervisor	Chief Controller Assistant Chief Controller Instructor Trainer Supervisor	Chief Controller Assistant Chief Controller Supervisor
Main Task	Supervising	Supervising Tutorship	Tutorship Management System (management of Training Team)	Management System (implementation of 6 phases of OJT)

3. Definition of words and phrases used in this Hand Book

Trainee: Refers to the non-certified ATC personnel. (Exclude the personnel who is slated for certification.)

Supervisor: Refers to the personnel who perform the supervising, tutoring and make advices to the trainee during the special OJT.

Trainer: Refers to a center figure of the special OJT team who plays primary role in decision making for recommendation to certify trainee is ready for final test. He makes up evaluation on trainee with coordination with other supervisors. He also makes training plan with trainee.

Trainer: Refers collectively "Trainer" and "Vice Trainer".

("Trainer" consists of "Trainer" and "Vice Trainer".)

OJT: Refers to actual time when trainee is communicating with pilots, coordinating with controllers at other positions or other organizations, operating ATC equipment. It also include the time when supervisor himself is doing control.

Training Supervising: Refers to whole period of training, that is "Initiation+OJT+Review". "Supervising a Training = Initiation +OJT+Review"

Fostering controller's training. : Refer to the times to foster a training by re-recognizing trainee's apprehension and to communicate with trainee from the broader perspective .This part is not main theme of this handbook.



Evaluation: Refers to a whole process of evaluation, "skill level", "possibility of move on to next phase", "decision of recommendation meeting". Among these, a supervisor performs the final check on skill level. On the other hand, an OJT training team including the trainer in charge performs phase shifts, and decision-making of a recommendation meeting.

Chapter 1 Role of Supervisor

Supervising (Initiation - OJT-Review) always has "double aspects those are "safety" and "education". Safety preserving aspects is called "Supervising" and education aspect is called "Tutorship and Advice." Although it is already carried out automatically but if you are aware of the two aspects you can understand supervising more deeply.

Supervisor is **required** supervising properly first, then concentrate on Tutorship and Advice.
Especially you **must not** neglect supervising for the sake of tutoring and advising.

1. Supervising

Always, be aware of the present and future traffic situation and weather conditions. When it is considered not acceptable considering the skill level of the trainee, interrupt the OJT concerned. Moreover, when it is considered that the trainee's communication with the pilot or coordination with other organizations or coordination with other control seats might affect safety or efficiency of the control, supervisor should take corrective actions and if necessary take up the communication and make corrections by himself/herself.

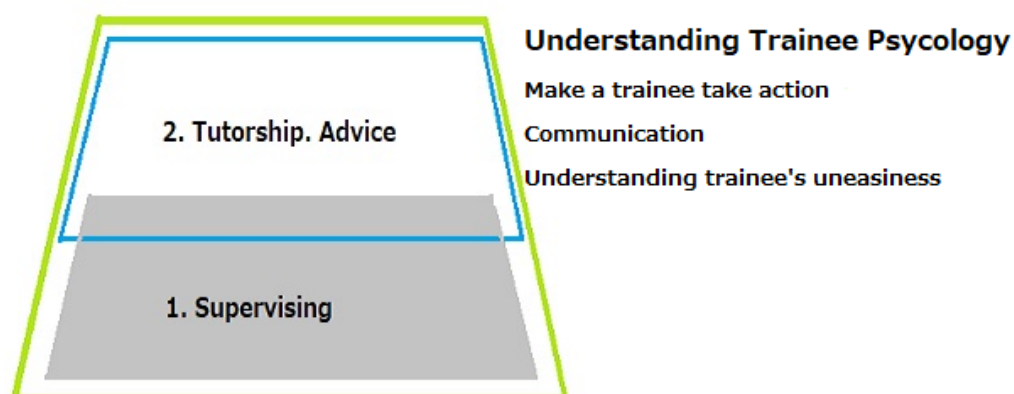
2. Tutorship and Advice

In order to master or expand trainee's lacks of knowledge and to meet the criteria set out according to the trainee's progress, perform instruction, guidance or proposal. These will be materialized when a "supervising" is ensured.

An understanding of trainee psychology

Communication which makes a trainee to take action

Understanding a trainee's concern

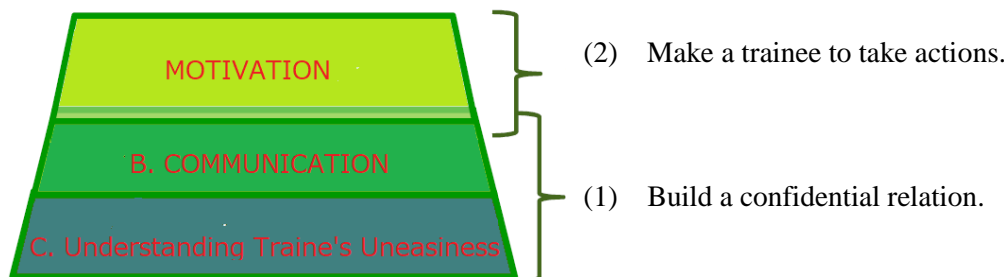


3. Understanding of trainee psychology

In fostering a controller, "establishing a strong confidential relation" is most important. The

strong confidential relation of the teach and taught serves as an effective element for growth. Then, what are the elements to build a confidential relation? For building a confidential relation, first recognize concern of the trainee then with this recognition take communication is necessary.

With this confidential relation as a base next step is to make trainee take actions

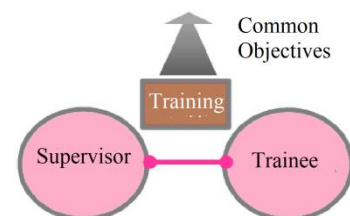


(1) Build a confidential relation

"Ideal Education and Training of Air Traffic Controller" and this handbook of Chapter 2 have described.

A trainee and a supervisor are project members with the same goals of helping a trainee to master required skills. From this perspective the relationship is "FLAT".

First, if the confidential relation between members is not firm, go on to the next step (make trainee take action) will be difficult. With satisfactory confidential relation's, training will progress smoothly.



A) Recognize uneasiness of a trainee

Why is it necessary to recognize uneasiness of a trainee? The objective is to build a confidential relation. This does not mean to adjust your opinions and behavior to please trainee. I could say it is enough to remember the situation when you yourself were a trainee.

1) Remember what you experienced

Here, first, you place yourself in a trainee's position then think what the trainee might feel. For example, when you enter an elementary school, or you start to work the first time, etc. Probably you felt big uneasiness when you were faced new environment or situation.

Uneasiness now trainee is feeling is just the same as you felt once. Since the supervisor has experienced the trainee, the base to appreciate trainee's uneasiness is ready at hand.

2) To understand the reasons of uneasiness

The following is one of the reasons for uneasiness.



#Insecurity over oneself

Can I do well in this office?

I might make some mistakes?

First, what shall I start with ?

#Meet with unfamiliar people for the first time.

What kind of a person is he/she?

Can I go well along with the team?

They might dislike me?

#Unfamiliar environment.

Where is the training room?

Where is the toilet?

This local region is pretty cold.

Could you remember uneasiness which a trainee feels?

Even if you remember once, you might tend to forget, since now you are in teaching position. If you have your own record of training, let's look back upon it, and devise so that you can remember periodically.

B) Communication

Why communication with a trainee is so important?

Although their standing positions differs, a trainee and a supervisor are both project team member who progresses sharing same recognition. To improve communication is natural and necessary things to do for the team.

Moreover, as described in the following clause, good communication is the key to make a trainee to take actions. That is, communication is required not only for a trainee but it also required for smooth supervising.

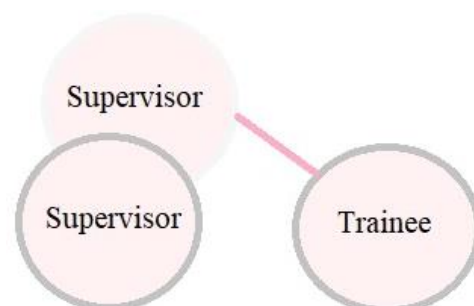
C) To maintain a good relations between a trainee and a supervisor.

Since the trainee is insufficient in knowledge and in skill, from the perspective of teaching, there exists some "gradient" between the standing position of the supervisor and trainee.

A pertinent "gradient" may be necessity.

However, you should be always attentive not to evaluate the trainee's personality.

Moreover, you must always check your feeling. It is **necessary** not to let your feeling out of control.



Summary of Establishing Confidential Relations

Three premises for the establishing confidential relation used as the foundation of

communication

- *Reconfirm trainee's uneasiness by remembering the fact that you yourself once were a trainee.
- * Recognize the fact that a trainee and a supervisor are member of the project with same goals.
- *Recognize that communication is required not only for a trainee but it also required for smooth supervising.



(2) Make a trainee to take action.

I do not see the reason why a trainee does not voluntarily tackle the training. How can I

motivate trainee? When teaching something to the student, this kind of feeling is not only for supervisor but also common with all people. What kind of device supervisor can make to stimulate the voluntarily intention for action. It may be useful to know the natural mental characteristic of human being for promotion of spontaneous action by trainee.

* Since training is treating people, there might arise difficult cases. Even if you tried hard you could not get the result you expected from the trainee, but you need not feel you are responsible. Please read this section not as a guideline for action, but as a hint for increasing the number of choices for training technique.

A) Three elements which make people to take action.

Here classify into three elements which make people to take action.

- 1) Motivation : Motive to make one want to take action.
- 2) Ability : Easiness one feels to do task.
- 3) Trigger : Cause to take action.

1)-1 "Motivation" is the key for action

The goal for a trainee is "To master a required skill and get qualified ". However, there is a tendency that the longer the training period the less the final goal functions as motives for daily action. For the trainee, daily training weighs heavier than the far away goal. Even if a trainee can bear the "high spirit" for the task at hand, it will be difficult to keep "high spirit" till the final goal. Here, in order to achieve our goal more certainly and effectively, let's study more concrete way to heighten motivation.

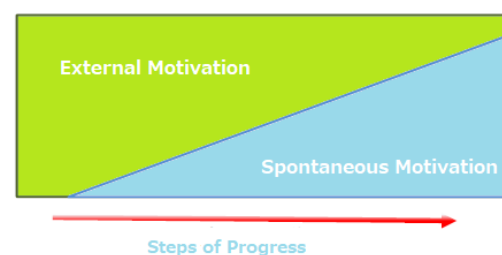
There are two kinds of motivating.

Externally inspired motivation: Bonus, punishment, etc.

Spontaneously inspired motivation: Motive based on the necessity or self-fulfillment.

Externally inspired motive has temporally effects to urge people for action but, it is not practical to continue giving a bonus and punishment forever. Their effect tends to fade in the long run. On the other hand spontaneously inspired motivation is comes from one's own accord and it will be expected to have consistency. More over forward looking attitude has a good effect psychologically on both sides.

During the process of training, a supervisor hopes that he can support successfully the shift from external motive to spontaneous motive.



1)-2 Internal -> Spontaneous How to device smooth shift.

The "convince" will trigger action.

One will step up spontaneous motives by;

- 1) Understand meaning and values of the task. That is "Convincing". That makes you to take positive attitude.
- 2) With positive attitude you will get a lot of practical experience
- 3) From the experience you get self-confidence and satisfaction

In the early stage of training, a trainee tends to hesitate to take actions, since a trainee does not yet "convince" the meaning or value of the task. When in such cases, the supervisor can back up trainee to strengthen spontaneous motivation by giving "words of advices to convince" or "a chance to try out by their own accord".

The "proper difference" triggers action.

One seldom get interested to the matters without familiarity. On the other hand for matters one knows very well also inspires hardly interest. Often times it is the objects with "proper difference" that inspire interest and motivation.

Then how much is the "proper difference"? It varies among individuals or times. We cannot say for sure how much is correct.

However, the most effective way is that the supervisor always grasps a trainee's present condition and the gap with the task trainee has given at the moment.

- * Set up the goal with "proper difference".

- * Perform OJT under the situation which has "proper difference" gap.

When motivation level is fixed at the low level, let's not try to raise the motivation level, rather adjust a task level low enough to meet motivation level.

2) Ability

Speaking of ability, it is common to be understood as "one's ability to cope with the task". When the trainee's ability to cope with the task is high enough, naturally it will be easy for trainee to take actions.

However, the ability of air traffic control does not improve in a short time. Then, besides improving the ability to cope with the task, the technique of heighten ability, i.e., the technique to make believe that the task is not difficult is effective. Make trainee feel he can do it by presenting the task seems easy will convince trainee that he can handle the task. It will increase the possibility to bring out the actions in a trainee.

3) Trigger

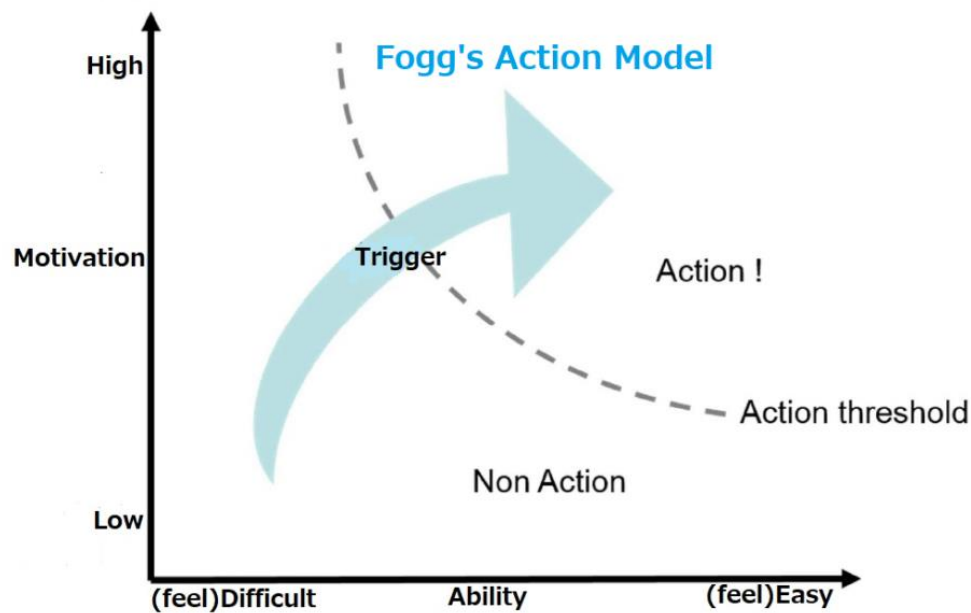
When motivation and ability is ready with sufficient balance, then all that you have to do is to give trainee a supportive push forward. Only advising by saying "Now is a time of action", or "Action is called for" will make a trainee take action.

B) Summary

In order to make one to take action, following three approaches are points.

- (1) Set up a goal/situation to increase motivation.
- (2) To increase ability That is, to make one feel that one can do the task by oneself.
- (3) Give trainee a supportive push forward by giving a trigger.

When the advice and the proposal in these viewpoints are tried to a trainee to take action, one of these may take effect.



Summary of Making a Trainee to Take Actions

Four hints to bring out trainee's action

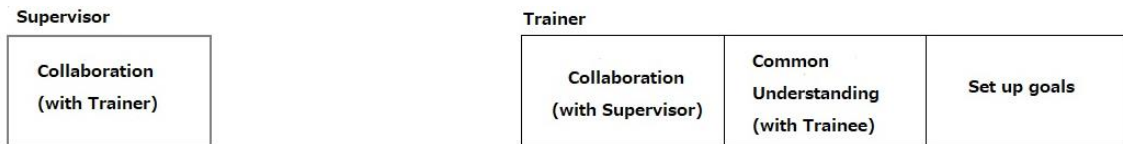
- * Help so that a trainee can convince the meaning and value of the task at hand.
- * Explore what is the "relevant difference" for a trainee.
- * Make the task seem easy for trainee.
- * Give trainee a supportive push forward.

Chapter 2 Role of Trainer in Charge and Supervisor

1. Relation between Trainer and Supervisor

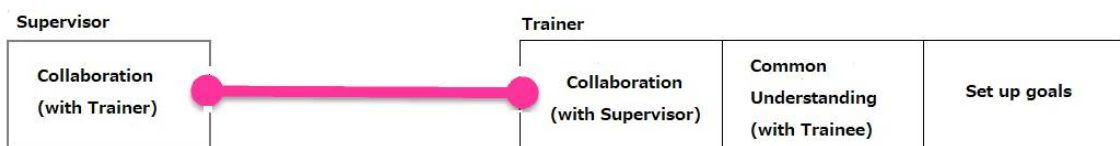
Let's think the relationship, (stated in the "Ideal situation for Education and Training of Air Traffic Controller"), between trainer and supervisor by applying to the real training supervisor.

Trainer plays an important role in the OJT training team centering on a trainee. It is classified into following three that the trainer should take a lead more than other supervisors.



The trainer must establish good communication with a trainee, and **must** set up a goal. Moreover, trainee **must** share a goal with other supervisors and **must** check the guideline for the time being. Trainer also has to collect the evaluations of training to the trainee by other supervisors.

On the other hand, the supervisor has to grasp the goal set by the trainee, and **must** contribute to suitable management of an OJT training team by expressing his/her opinion about the goal or making the evaluation to a trainee's training to the trainer.



2. Six training phases oh supervisor. "Initiation (3) +OJT (1)+Review (2)"

Divide "Supervising" along the time-axis.

It is roughly divided into three time periods, the OJT period and before and after the OJT period. We will call these "Initiation", "OJT", and "Review."



Furthermore, "Initiation" can be sub-divided into three phases (Preparation, Decision, Briefing) and "Review" can be sub-divided into two phases (De-Briefing, Follow-Up) respectively.

Initiation	Preparation	Check on Training Progress, Check on Trainee's State, Set up Goal, Confirmation on Target and Guideline among supervisors	
	Decision	Decision of starting OJT, Selection of the OJT Technique	
	Briefing	Reconfirmation of Progress, Setting specific OJT Goal	
OJT	OJT	Monitoring	(will describe at later section)
		Intervention	(will describe at later section)
Review	De-Briefing	Information sharing, trainee's Skill level, Tutorship and Advice given to the trainee (at the end of every training unit)	
	Follow-Up	Check on Training progress, Check on Trainee's State, Set up Goal (at the end of every training round)	

If the decision is not accurate, the effect of OJT will not only decrease, but also may have bad influence on a trainee's motivation. Moreover, proper briefing can prevent the mistake in OJT in advance.

Description in “ATC training (To have the time to discuss with supervisor and trainee at every round.)” indicates "Follow Up" and "Preparation".

3. Two techniques of OJT

Let's deepen an understanding about OJT which is a core element of supervising

There are two important techniques for OJT, "Monitoring" and "Intervention". During the OJT period, more stress is placed on supervising aspects than "Preparation" or "Review". Supervisor **must** always in mind by paying too much attention to "Tutorship and Advising" and end up paying less attention to "Supervising".

OJT	OJT	Monitoring	Observation of a trainee's action, Monitoring reserve capacity, Skill level, Auxiliary Tutorship and Advising
		Intervention	Correcting a trainee's action, Actions in place of trainee

4. Specific role sharing of trainer and supervisor

Among six supervising phases, roles for "Follow-Up" and "Preparation" differs between

supervisor and trainer.

Role sharing in Follow-Up & Preparation

As a main member in an OJT training team, the trainer should communicate densely with the trainee. Out of all members trainer **must** grasp and understand training most. Then inform the supervisor those information and from supervisor collect his evaluation and opinions. This is the "Follow-Up" and "Preparation" for trainer. The supervisor **must** grasp the goal which the trainee set to training charge, and has to promote training by a big birr in the more suitable direction by expressing an opinion to this or telling the evaluation to a trainee's training to training charge.

The goal common to both a supervisor and a trainer is, by seizing an opportunity of training meetings and cooperate with each other during on and off the training, to establish more effective collaborative system.

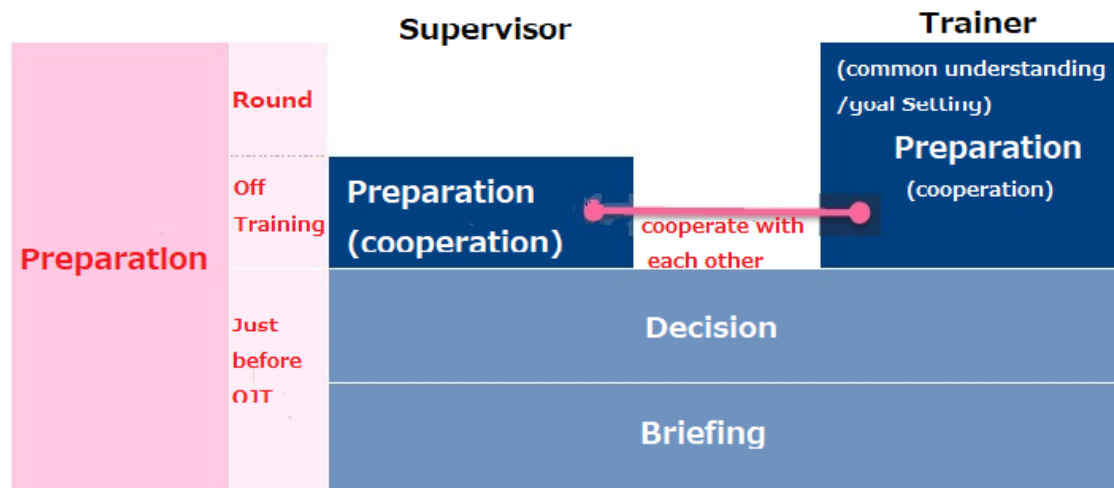


Chapter 3 Six Supervising phases

Chapter 3-1 Preparation

For supervising, you **must** ensure preparation. Appropriate preparation makes big difference in the effect of OJT. It might also influence safety.

The supervisor **must** understand that a supervising is the "Trinity" of "Preparation" + "OJT" + "Review."

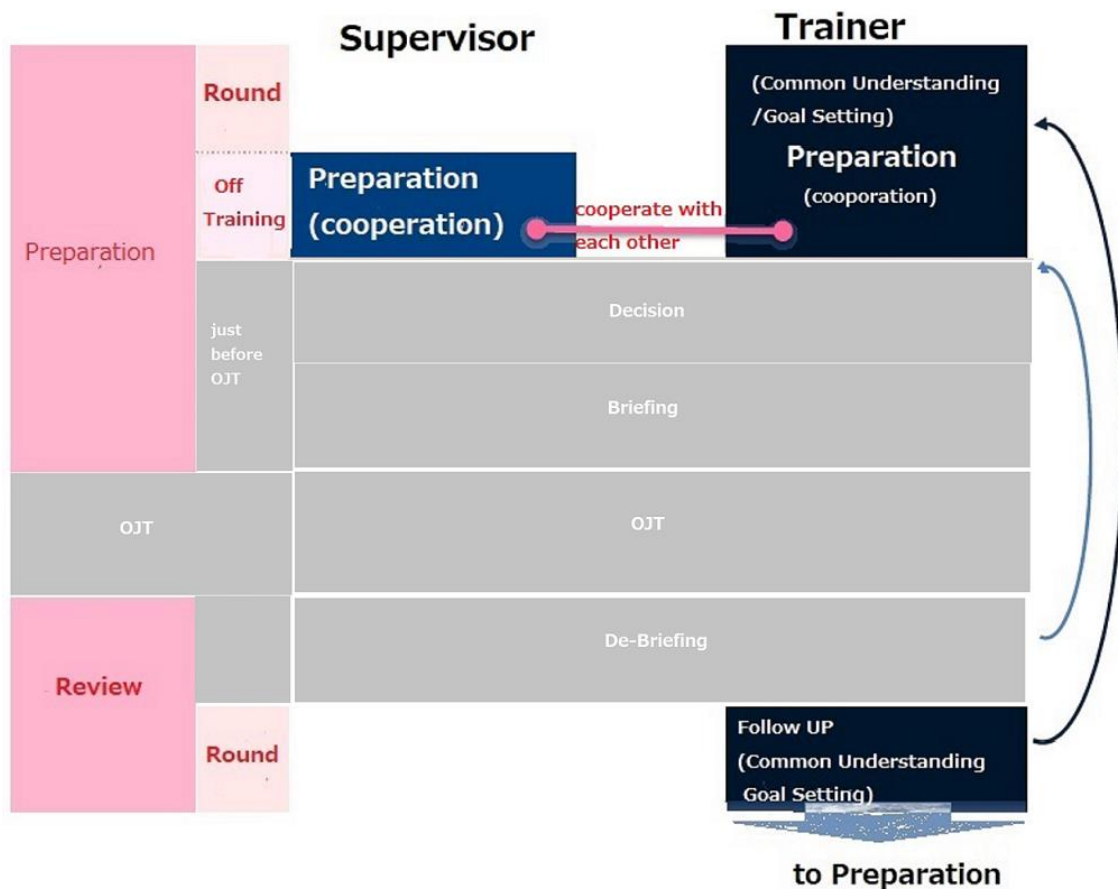


I Follow-Up & Preparation [including off OJT]

Let's divide "preparation" into what is performed "on the day of training" and "during off the training". Preparation refers to the training performed "during of the training".

The "Preparation" which focuses on the future is indivisible from looking back upon the past. Let's consider "Preparation" and "Follow-Up" in a Review (will refer later) performed after every round as one thing.

As a trainee makes preparations for OJT during off the training, a supervisor also **must** make the preparations for supervising.



1. Objective

Appropriate "Follow-Up" and "Preparation" will have following effects.

With appropriate "Follow-Up" and "Preparation" one;

- (1) can exclude OJT under the environment which does not suit a trainee's skill level.
- (2) can set up suitable OJT goal.
- (3) can reduce the problems during the OJT resulting from a supervising.
- (4) can avoid irrelevant evaluation to a training by a trainee.
- (5) can heighten the training effect over each OJT.
- (6) can manage trainee's stress effectively.

<Exercise>

Among six supervising phases, in which PHASEs are these effects acquired by performing

suitable "Follow-Up & Preparation"?

(Since we are going to study about these six phases, you may not know.)

- ① . _____ . **Decision**
- ② . _____ . **Briefing**
- ③ . _____ . **OJT(Monitoring, Intervention)**
- ④ . _____ . **De-Briefing**
- ⑤ . _____ . **All phases**
- ⑥ . _____ .

As you see from this exercise, "Follow-Up & Preparation" is important phase. This phase serves as the foundation of other phases. If nothing is prepared, you tend to fall into leaving-a-matter-to-chance training. For supervising, you **must not** apply the idea of "In ATC business, there is no telling what will happen in the future, so act flexibly according to circumstances." Unlike the control you yourself performs, a trainee will be directly affected in a supervising.

Now, let's study about "Follow-Up and Preparation" performed by trainer and supervisor.

2. Common understanding with trainee (as a trainer)

For trainer "Follow-Up & Preparation" start with establishing common understanding with main actor of the training a trainee. The common understanding becomes more substantial by maintaining it all through the training.

The description "to have the opportunity for a trainee to talk with trainer at each round " in "Education and Training of Air Traffic Controller " has pointed out this very "Preparation and Follow-Up". Bearing in mind the relation with "three points in which trainer should perform leading role", let's deepen our understanding about a specific points to be considered during the training.



(1) **Make a trainee feel relaxed (as trainer).**

A. Place and relative sitting position...

Let's do it at the calm place other than the control room where both can talk frankly each other. Moreover, it will be good to sit not "face to face" but "sit "side-by-side". Trainer and a trainee mutually could understand a more deeply by sitting down facing same direction, since they are the project members who make progress toward the same goal.



B. What is the intention to make trainee feel relaxed?

It is not for spoiling a trainee. The trainee, by and large, always has the feeling of being monitored by supervisor. Just preventing a trainee falls into negative state of mind, such as fear concern or dislike, the possibility of a trainee reacting and expressing more frankly will increase. Moreover, it become easier for trainee to accept or recognize own weak point. By carrying out like this, we could deepen common understanding more.

C. A specific technique

Outstanding humor or the like is unnecessary. It will be effective to use an innocent chat as an introduction. Or if the chat is over the training, then start with the affirmative talk, will also be effective. Everyone has his/her own field of expertise, so let's cope with trainee flexibly considering the relationship with the trainee.

(2) Grasp the progress situation of training (as a trainer)

The trainer **must** grasp the progress situation of training. By the observation of the trainee's action during off the training or through supervising and observation of OJT, you already have a certain amount of grasp of the progress situation of training. By having a time with trainee at out of the control room, you might get more accurate grasp of progress situation, or you might be able to extract the problems which had not yet surfaced.

Moreover, these grasp of situation contributes to safety in OJT. Now, you can intervene at suitable timing.

A. Understand "Phases" and the "Assessment Sheet" prescribed at the office.

The trainer **must** understand training "Phases" and the "Assessment Sheet" which are prescribed at each office based on "Education and Training of the Air Traffic Controllers."

B. You should understand that progress is measured against goal.

Grasping the progress is roughly classified into two. Those are short-term viewpoint, and a long-term viewpoint. To judge whether the training attained the "goal for the round." is a short-term viewpoint. On the other hand long-term view point is a measured against "middle/long term goal, like “whether the trainee’s progress is slow or fast” or “whether the training making little/big improvement lately”.

Grasping the progress of the training should measure against the goal which both trainer and a trainee set up. It **must** be done supplementary about matters other than the goal.

C. Ask a trainee's impressions.

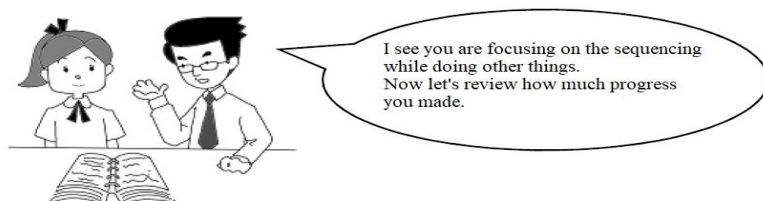
First of all, let a trainee speak about the impressions of one round of the training.

By outputting, one can input effectively. If you would like to perform tutorship and advice effectively, let's start with asking a trainee's impressions.

D. Talk about positively evaluated points.

Next, the trainer **must** talk about the positively evaluating points during one round. You **should** also tell the positive evaluations by other supervisors.

Even when a trainee expressed rather bad impressions, you should begin with the positive aspect of the training. And let's deepen the talk gradually by developing a question about other aspects of the training.



Good parts must be recognized as "Good" otherwise the trainee might take wrong selection.

Moreover, let the trainee re-recognize that he is under supervising.

You **must** accept "good part" in order to give confidence to the trainee. When talking about the good points, let's make it specifically.

△ "It was good."

○ "It seems to me, at first you haven't noticed upper wind effect. But from the middle of training, you noticed disorder in the traffic flow from the deviation of flight tracks. You took corrective action. That was good."

E. Talk about a shortage point.

Next, the trainer **must** point out a shortage point. It is also required to inform trainee that not

only supervisor's own opinion but also other supervisor's opinions at training meeting and other occasions as much as possible. With the cooperation of whole members, to make the training advance, it is very important to tell the evaluations of the supervisor to a trainee

1) Remember the "each round Goal".

When trainer talks about the shortage points of training, he/she **should** be conscious of whether the shortage points were within the limits of the goal shared in advance, or not included in the goal. Trainee tends to give priority over the goal set up in advance. You **should** talk about the "shortage point" after understanding that the shortage itself might be the result of the goal achievement.

*About goals: What was accomplished or what was not yet accomplished.

* Other than goals: Did any change take place in matters other than goals?



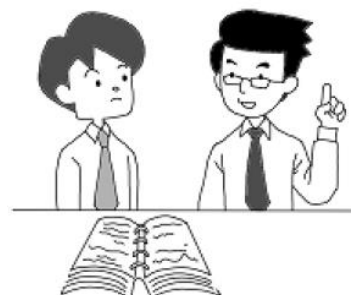
(2) Keep in mind a bidirectional discussion.

Not only inform unidirectional from trainer to trainee but also ask the trainee what he himself was thinking or what he thinks about the cause of problem. You **should** confirm trainee whether he/she really understands the contents.

* When you ***** to ANA123*****, why did you do that?

* Why did you overlook JAL345"?

* Then, how do you act when you are in a same kind of situation again?



(3) Grasp the condition of a trainee. (as a trainer)

When the trainee's manner seemed unsatisfactory, probably, it is good to explore the state of trainee's mind from a viewpoint of "motivation", "ability", and "a trigger",

* Does the trainee feel fulfillment and necessity himself?

* Does the trainee think that a task is difficult/easy?

* Does the trainee need some "push"?

There certainly are difficult cases, since we are dealing with human mind. However, let's do what you can do before blaming the trainee, saying "His motivation is low." or "He does not act".

(4) Goal Set Up (as a trainer)

A. To understand the meaning of goal setting.

Needless to say, trainer and trainee shares final goal of "to be qualified as an air traffic controller". In some cases, for a trainee this goal seems to lie very far away. For example, everyone feel uneasy when thrown up in a dark tunnel where one cannot see the exit. The uneasiness will be mitigated if there is a flashlight which illuminates ahead or the chart which shows whole tunnel.

In training, goal setting is equivalent to a flashlight or a whole chart. By subdividing the distance a trainer and a trainee can grasp "the reason why you have to tackle this goal now" or "what kind of step awaits after clearing this step". The trainer **must** understand the meaning of above mentioned setting up goals.



B. Set up middle-term, long-term goal and the goal for every round.

With a trainee, trainer **must** set up middle-term, long-term goal and the goal for every round. "With trainee" means trainer and a trainee will set up goals through discussion. Or it means, first trainer will set up a goal then sharing the goal with trainee and getting consent from trainee.

Trainer and trainee **must** set up goals one, two, three month ahead. By rendering rough milestone visible, you can make it as a custom to establish a priority sequence for each milestone task. It is the "whole chart" in a dark tunnel.

For each milestone task with priority sequence, you **must** set up specific goal for the day. With this the trainee can make it a habit to find out importance to day by day, unit by unit training. It is the "flashlight" in a dark tunnel.

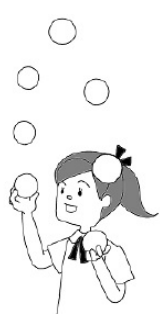


C. Trainer should understand the goal will influence a trainee's motivation.

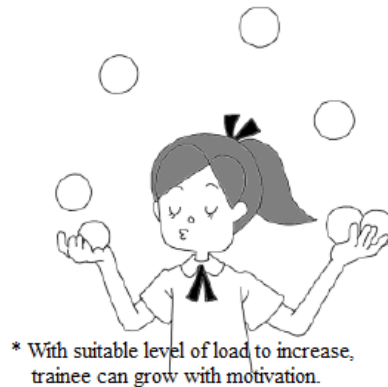
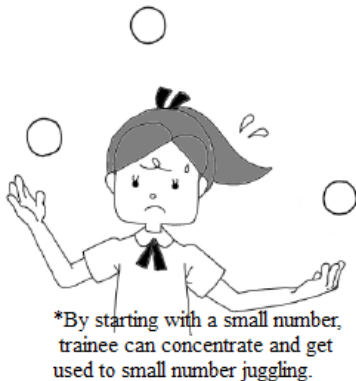
1) Goals which boost spontaneous motivation.

Goal setting has big influence on a trainee's motivation as stated at "A. Understanding the meaning of goal setting." It is because a trainee's motivation can be boosted by setting up the goal level according to the progress of the training, or the trainee's condition. It will be effective to boost the trainee's spontaneous motivation by setting up goals which have "proper difference" from the trainee's interests (skill level).

You should understand the goal setting is a tool of controlling a motivation. For that purpose, it is required to grasp the progress of training and a trainee's condition exactly.

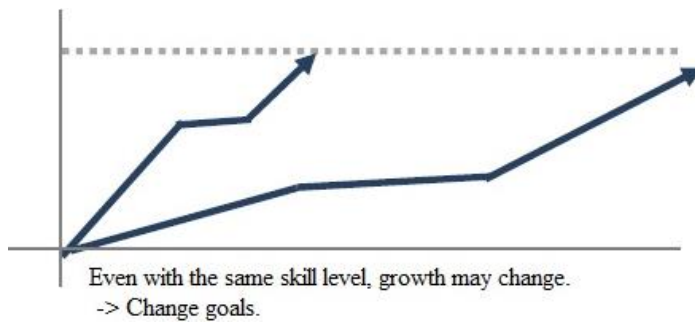


For example, let's think the case of mastering the juggling. Here let's suppose that the final goal is juggling ten balls easily. The direction of increasing one ball at a time could maintain motivation rather than giving "three more balls" to the person who tried hard and came to be able to juggle three balls at last. From this viewpoint, you **should** limit the goal to the small portion (which is easy to handle) especially in an early stage. The trainee can grow little by little and he/she will be able to unify the fragment into integrated structure.



2) The goal relative to a growth rate

When a growth rate is good, the trainee can absorb somewhat higher goal and more subjects, but when a growth rate is slow even if it is inconsiderable goals, he/she cannot attain the goal and it may lead to the decline of motivation. When training is behind the schedule, we tend to set up a higher goal trying to catch up, but in many cases it rather leads to an opposite effect. Even if it may felt as a detour, we **should** understand that the goal with suitable skill level is good for effective and efficient training.



3) Support for promoting self-reliance.

You **should** gradually transfer the leadership of goal setting to a trainee as training approaches the final stage. When a supervisor thinks "Trainee is almost ready for final trial", it is **necessary** to make the trainee set up a goal by himself and give consent to the goal. It is also a supervisor's role to give a more free hands so that a trainee can act spontaneously.

(5) Give trainee a questioning opportunity (as a trainer).

The leading role is played by a trainee and it is highly **recommended** for a trainee to tackle training actively. It is an unavoidable thing that the trainer makes much of the talk. So, it is **required** to give a questioning opportunity to a trainee with suitable frequency.

It will be an opportunity for a trainer to know trainee's questions about training or a trainee's own state.

<Exercise> For a trainee, among following three questions which one is easy to make?

And why is it?

- (1) So far today, if you have any question, please.
- (2) There isn't any question?
- (3) Are there anything you want to confirm or you want to tell?



(1) So far today, if you have any question, please.

(2) There isn't any question?

(3) Are there anything you want to confirm or you want to tell?

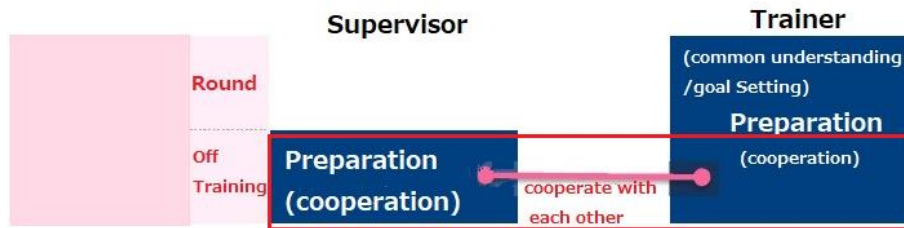
I understand there may be a question hard to ask. The third one is the best way of asking. The trainee surely think that the supervisor is truly interested in a trainee's question. Trainee thinks the supervisor is not trying to make advices and the supervisor is easy enough to ask questions.

3. Daily information sharing (as a trainer, as a supervisor)

(1) Information sharing between trainer and supervisor

As stated in "Chapter2 1. Relation between Trainer and Supervisor" cooperation between a trainer and supervisor is very important.

It is rather limited that matters sole OJT training team can do. A supervisor's ability is **required** to make progress in the more suitable direction with bigger strength. The supervisor should be an adviser to an OJT training team, and also **should** be a promoter.



A. A supervisor's implementation items

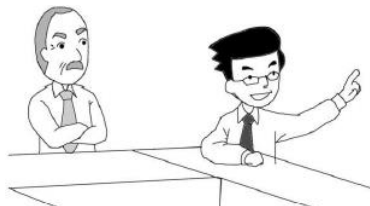
The supervisor **must** grasp the progress of training by communicating with other supervisors or checking the training assessment sheets. Moreover, at the meeting prescribed in "Air Traffic controller's Education and Training," supervisor **must** inform his evaluation of the training and express his opinion to the OJT training team's "goals" and "guidelines" so that the training will develop toward better direction.

By performing these information sharing appropriately, the supervisor can acquire the following effects.

- (1) Supervisor can make suitable decision by consideration the training progress.
- (2) Supervisor can perform effective briefing in shorter time.
- (3) Supervisor can make the goal remain within the contents agreed with a trainee.
- (4) As a result, supervisor can contribute to booster a trainee's motivation.
- (5) Supervisor can perform suitable intervention according to progress.

B. A trainer's implementation items

The trainer **must** collect the evaluations to the training from other supervisors at training meeting or at other places. And you **must** transmit the evaluations as an OJT training team, and a future goals and your guidelines to other supervisors.



(2) Preparation for make it convincing

When telling evaluations or sharing information, trainer and the trainee **should** make convincing remarks.

The convincing remarks are done with clear reasoning. You have to make it clear, "why you are giving such evaluation" or "why it not appropriate to give such evaluation". When you are asked additional questions, it is **necessary** that you can make an explanation which reinforce your own idea.

How about preparing a written text of your idea in advance? By writing you can organize your thought.

For that purpose, you have to deepen your understanding about training phases and an assessment sheet at your office. Furthermore use assessment sheet as it is originally designed.

Summary of Follow-Up & Preparation

Ten points for Follow-Up & Preparation used as the foundation of training.

[Supervisor & Trainer]

- * Deepen an understanding about the training phases of the office and an assessment sheet.
- * Utilize a written text so that you can express your opinion with convince.

[Trainer]

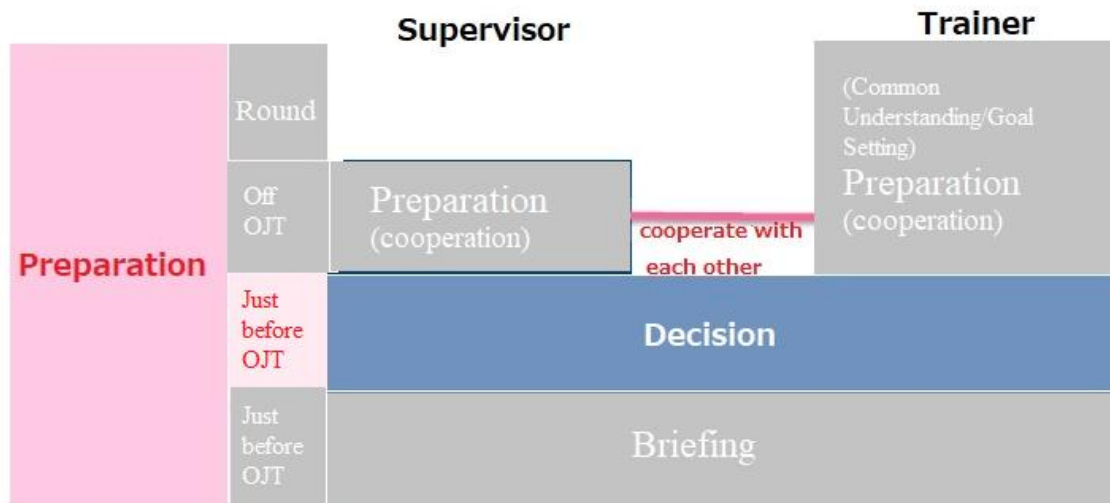
- * First, ask a trainee's impressions about training of the round.
- * Talk with a trainee positively evaluated points at the round.
- * Talk with a trainee's shortage points at the round.
- * Set up effectively middle and long-term goal, with a trainee.
- * Collect evaluations from other supervisors and inform other supervisors a future goal and guideline.

[Supervisor]

- * Grasp the progress of training.
- * Inform evaluation to the OJT training team.
- * Make advises to the policy of an OJT training team and make it develop.

II Decision [just before OJT - during OJT]

"Decision" is a phase which compares the progress and the operational situation of ATC, judges whether to start OJT or not, and chooses the OJT technique just before OJT.



1. Objective

The supervisor **must** make decision, in order to ensure a supervising, but this is not special phase but the during on and off the training supervisor is doing it automatically. Once again, Let us consider what is it for?

A. In order to ensure supervising

Causes of the problems which occur during the OJT are analyzed as "not grasped the trainee's progress appropriately" or "to have neglected a step to collate trainee's progress and operational situation".

That is, when a supervisor has failed to notice that the traffic is exceeding or exceeded trainee's capacity. Or when supervisor realized the situation he himself could not fulfill a supervising by his own capacity.

You **must** understand that the series of flows of "Grasp training progress->Decision" are phases indispensable in order to ensure "supervising."



B. In order to boost a spontaneous motivation

As stated also at "3. (2) Make trainee to take action." training under the environment which "shifted moderately" from the trainee's interest point will heighten spontaneous motivation. Under the environment where a trainee can issue permission or instruction by his own judgement he can experience that preparation leads to a success and it will be the energy for the next OJT.

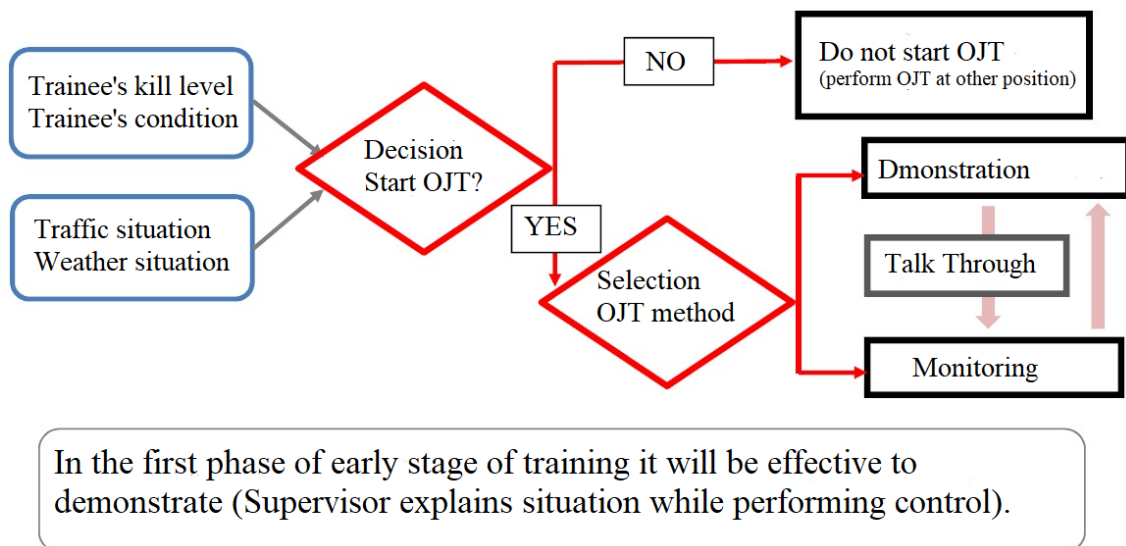
The training that impress the trainee, he cannot cope with the situation, when supervisor himself is well aware of the fact that operational traffic is well above the trainee's skill level will not give a good effect. Rather the failure experience may remain within a trainee as fear and uneasiness, and in a following training it may induce strangulation of consciousness.

This kind experience **should** be performed restrictively under the strictly managed environment. Skill and consciousness will improve effectively by making success experience step by step.

You **must** understand that selection of a training environment is also a tool of motivation control.

2. Decision of start OJT. Selection of OJT enforcement technique.

After comparing the progress and the operational situation, the supervisor has to judge start of OJT and selection of the OJT technique.



Moreover, it is not enough to make this judgment only before start of the OJT. Even after starting OJT, you **must** observe and predict the traffic and the weather situation continuously. As a result, when it is predicted that the operational load will increase beyond trainee's skill level, you **must** take flexibly other measures, such as shifting to other OJT technique.

<Exercise>

For example, are the following selections appropriate? Let's think together.

1) At first supervisor was monitoring, but as the traffic increased the trainee tend to mistook call signs. Then supervisor made "Intervention".

It would be better if the increase of the traffic was correctly predicted at the start of the OJT.

2) Then, the supervisor controlled the traffic for a while.

With the increase in traffic, without bulled through the monitoring but shifted to the "Demonstration" is appraisable.

3) Since the traffic flow resumed normal, supervisor returned the control to the trainee and started OJT again under monitoring. However, the traffic was still too heavy for trainee, he could hardly issue permission or instructions and was unable to have his way with the traffic.

It is quite likely that the calm traffic situation for a supervisor is too many for a trainee. Moreover, trainee might be bit frightened and disturbed after the intervention. When returning to monitoring, let's do it without getting impatient.

Summary of Decision

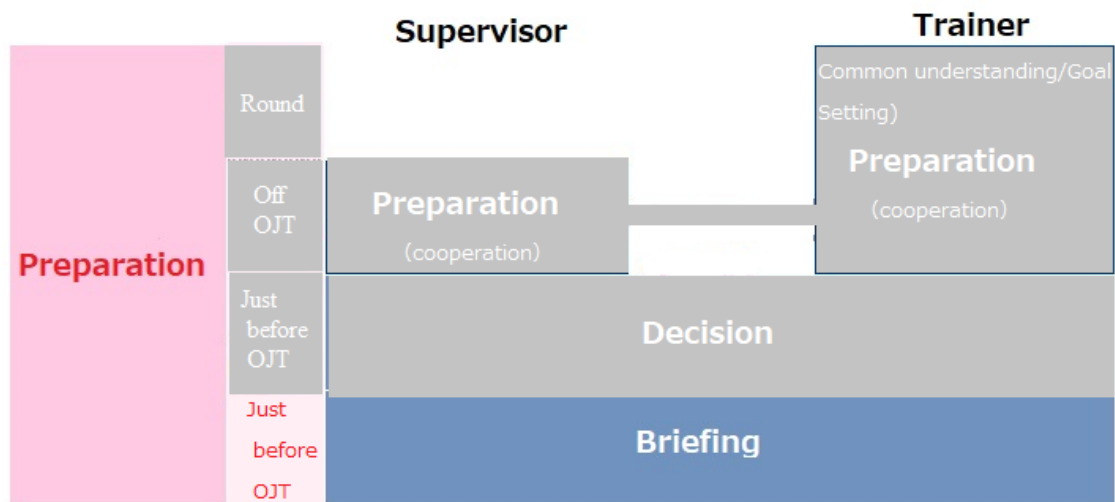
"Decision" which the supervisor is performing automatically is an important phase. There are three points in it.

- *After comparing the progress of training and the operational situation, judge the start of OJT and select OJT technique.
- *Supervisor should recognize it as a phase required in order to carry out a supervising certainly.
- *Supervisor should recognize that the OJT environment also affects a trainee's motivation.

III Briefing [just before start OJT]

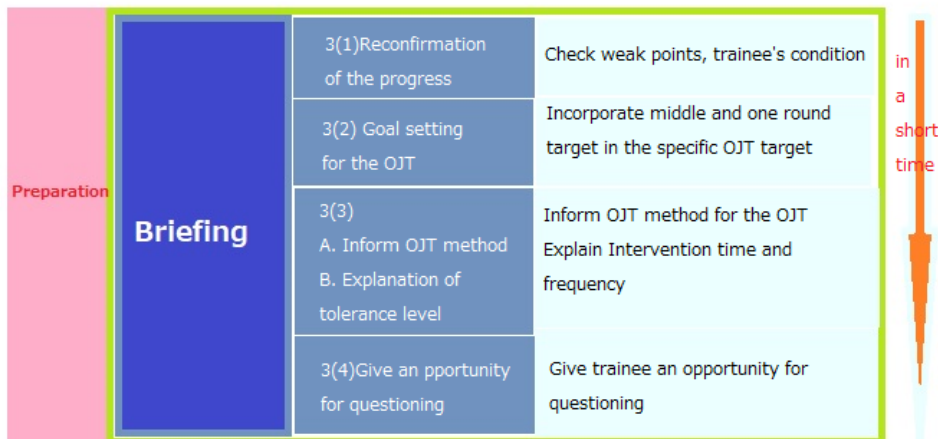
Briefing is a phase in the "preparations" and is performed just before starting the OJT. OJT is mainly carried out at the control desk in the operation room.

Since it is not always the case when a supervisor and a trainee can start taking the position simultaneously but the supervisor may already be controlling the traffic. So it is **necessary** to stick to the point so that in a short time required items are all referred and should not be omitted.



*When taking over charge of control, a supervisor has the responsibility to ensure the situation in which trainee confirmed all matters concerning "take over" including a traffic situation, as provided in the "Regulation of Aeronautical Security Service 5 Regulation of Air Traffic Control Operation VII Operation Guide for Training" However, this handbook explains matters other than this responsibility.

2. Don't give a trainee the negative psychology pressure.



1. Objective

A. For a supervisor

Briefing is an final opportunity which establishes the common understanding with a trainee before start of OJT. Based on the information gained in advance from the Preparation about "progress", "goal" and "guideline ", supervisor directly confirm with a trainee about the information concerning OJT. With this, supervisor can choose the exact timing of intervention and technique during the OJT. Moreover, based on an operational situation on the day, supervisor set up the specific goal focused on the OJT. This is effective in order to make training constructive, and also it is required to make suitable De-briefing. Furthermore, explaining the OJT technique and tolerance level selected by "decision" has good effect also for the trainee.

B. For a trainee

Facing the OJT, trainee is given an opportunity to settle uneasiness(or small questions) which he bear in his mind. Moreover, you can make OJT more meaningful by recognizing the specifically designed goal. Furthermore, unnecessary fear of insecurity and frustration are avoided by recognizing the tolerance level of the OJT about to start.

2. Don't give a trainee the negative psychology pressure.

All the study begins from consciousness. People's consciousness domain (functional exertion degree of the senses) is not always constant, rather it changes with a trainee's states of mind remarkably. It is known that negative psychology such as fear, a concern, and dislike, will strangulate a consciousness domain remarkably. Only by not making a trainee fall into such a negative state of mind, a trainee's spontaneity is maintained and a possibility of boosting the effect of training improves greatly. Especially at the times just before OJT, psychological pressure to a trainee **should** be well taken care of. It is the scene to make the best use of the contents of the "understanding of trainee psychology" described in Chapter 1. A device is **called for** as much as possible so that the mental condition from which the maximum effect of a trainee's training is acquired may be maintained. Let's look back upon your own voice tone or expression.

<Exercise> What kind of influence does the following language have on a trainee's psychology?

①

You fail last time, didn't you? Don't fail today.



The trainee thinks he has to recover supervisor's confidence and has already feeling pressure even before taking the position (OJT).

②

Let's just check what we want to do in today's training.



This will make almost all trainees relax. This shows that supervisor is interested in trainee's opinion, and encourage the trainee to bring up his idea.

③

Begin training. I will point out if you make any mistake while training.



This remark has an impression the supervisor is interested in a negative side of the trainee and indifferent to the good points.

④

Stop worrying about such a way .
Since, that way it goes



The supervisor does not have any hope for this trainee. Remark with full of irony will certainly dampen trainee's motivation.

3. Final check with trainee

(1) Reconfirmation of progress

Among following points the supervisor **must** pick up necessary items and check them by oral questioning.

(1) Check focusing on a trainee's weak point.

*Please mention the impact and points in the case of using this runway."

* Did "what kind of mistake you make with the last top"?

By asking the point that it seems that it is a weak point, I may be able to prevent a mistake of the trainee in OJT in advance. On the other hand making a trainee learn through failure is also a technique, but this technique should be employed within an original objective of the OJT.

2) Check trainee's experience in the same operational situation.

- * When did you control this type of approach last?

- * Have you controlled during the strong wind like this?

3) Check on the changes of prediction of a future operational situation.

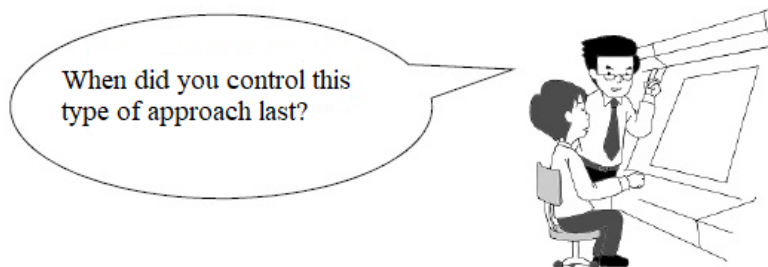
- * What do you think of the traffic situation tens of minutes after from now?

- * What are the possible traffic situations which might occur and you have to pay attention for?

4) Take one more step forward and check about today's condition or the latest state of mind of trainee.

- * So far how do you think you are doing?

- * Do you think you are stuck recently?

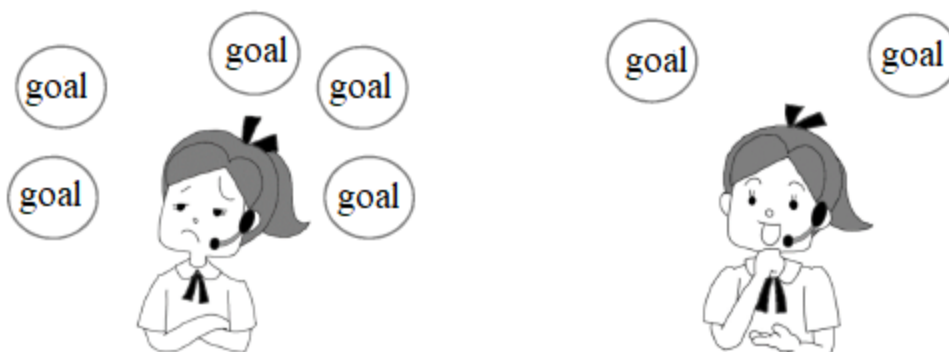


(2) Goal setting in the OJT concerned

A supervisor must set up a specific priority goal for the present OJT concerned, by relating one-round and middle-term goal to the traffic and weather situation during the OJT.

If too many goals are set up, a supervisor cannot fully perform tutorship and advice, either. In order to carry out efficient training, you **should** limit the goal to about three at the most.

By this, supervisor can specify clearly "what is required and what is not required" for the OJT concerned. About the goal which is not required for the OJT concerned, even if trainee fails to comply, you **should not** make too severe intervention or briefing.



You **should** understand that when a trainee is making good progress, you may raise goal to the little bit "high load goal", but when he is behind the training schedule it is necessary for the effective and efficient training to set up a goal which has comparatively lower hurdle. Moreover, it is also effective to let a trainee set up own goal. By letting the trainee to set up his own goal and giving a consent to it, you can help to establish independence and positiveness in trainee and this will promote shift of trainee's motivation (from external motivation to the spontaneous motivation).

(3) Explanation of transfer and tolerance level of the OJT technique

A. Tell OJT technique to the trainee

The supervisor **should** tell about OJT technique selected in "Decision". Moreover, if there is a prediction of changing technique because of the operational situation change after an start of OJT, you **should** tell also about the prediction.

B. Explanation of tolerance level

Since "Intervention" certainly accompanies when performing "Monitoring" as the OJT technique, the supervisor should explain the following tolerance level according to the situation.

- 1) The timing of Cut-In
- 2) Interferer other than Cut-In

During the OJT, by grasping the range of his own control, the trainee can face training without unnecessary fear, insecurity or frustration.

This leads to raising the degree of functional exertion of a trainee's senses.

(4) Give a questioning opportunity.

Although, the leading role is played by a trainee and it is highly **recommended** for a trainee to tackle training actively but it is unavoidable that the trainer who plays leading role makes much of the talk.

Then, it is necessary to give a questioning opportunity to a trainee with suitable frequency.

Facing the OJT, trainee is given an opportunity to settle uneasiness (or small questions) which he bear in his mind.

Summary of Briefing

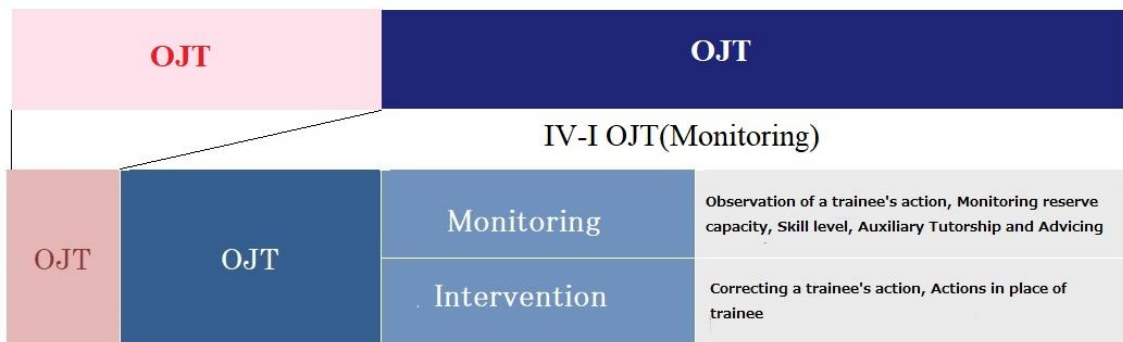
Five Briefing points (must briefed in a short time)

- * **Don't give a trainee negative psychology pressure.**
- * **Reconfirm progress focusing on a trainee's weak points.**
- * **Set up the goals (limiting the number) for the OJT concerned.**
- * **Tell OJT technique to a trainee.**
- * **Explain the timing of Cut-In, and the frequency of interferences to a trainee.**

Chapter 3-2 OJT

The OJT is the core time zone of supervising and the aspect of "supervise" become most prominent in OJT, compared with "Preparation" or "Review". It is also a time zone when workloads becomes highest since as a supervisor, he has to grasp a trainee's skill level while supervising.

In this high load situation, the supervisor always **must** recognize the priority sequence priority of the matters to enforce.



1. Objective

The prime objective of "Monitoring" is to grasp a trainee's skill level anew. Compared with observation of trainee's action and progress information obtained through "Preparation" or "Briefing", supervisor can grasp by his own eyes and ears at what points trainee made progressed or stagnated.

Then, for what purpose supervisor have to grasp a skill level? It is to make an effective advice and tutorship. Namely, it is attributable to the original objective of the training, that is to make trainee master required subjects effectively.

Supervisor might tend to make hash remarks or speak with severe tone, since traffic load is high even for a supervisor. However, a supervisor is **expected** to act always remembering an original objective.



2. Load on Supervisor

In OJT, the supervisor must simultaneously perform very many matters.

What matters concerns supervisor himself during the OJT?

Lay out a supervisor's own plan for the traffic.
Grasp the skill level by observing a trainee's behavior.
Perceive and check the motivation of trainee's behavior.
Correct a trainee's behavior.
Correct supervisor's own planning by the result of a trainee's reaction
Supervise and predict traffic and weather situation.
Supervise and predict a trainee's remaining power.
Supervise and predict a supervisor's own remaining power.
Consider suspension/break of OJT or change of the OJT method.
Perform tutorship and advice whenever possible.



You **must** understand various loads are simultaneously on a supervisor and it is a big work load.

3. Load on trainee

On the other hand, for the load concerning a trainee we have so far described in this hand book here and there. Please understand that all through these sections of "An understanding of trainee psychology", "Preparation", "Decision", "Briefing" and other, the proposition of "How to maximize trainee's consciousness domain" is the backbone of this handbook.

At here and there in subsequent sections, referring to the load concerning trainee, we describes what a supervisor should perform.

Intervention, advice and
tutorship from supervisor



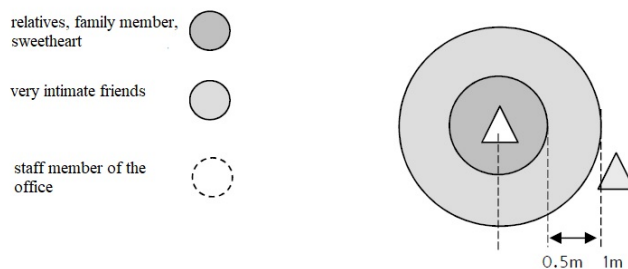
Handling traffic

With suitable preparations on the side of supervisor, we can maximize a trainee's consciousness domain and can make training efficient along with the original objective.

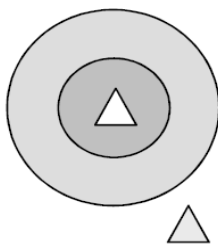
4. Basics for Monitoring

(1) A supervisor's positioning

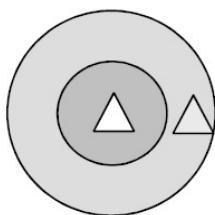
Considering effects on trainee's psychology, supervisor **should** compare the merit and demerit of his supervising positions. The distance with which one feels unconfutable can generally varies with one's social status.



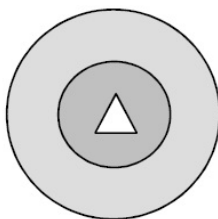
The supervisor **should** recognize that supervisor is "the staff member of the office". Even if supervisor thinks that he has personally intimate relation with a trainee, but the trainee does not necessarily feel completely same way. Moreover, in OJT, you **should** devise so that individual feeling may not intervene. You should recognize that changing the attitude according to supervisor's personal preferences may be a psychological burden even on the side of favored trainee.



When training approaches the final stage and you want to intentionally heighten training effect, positioning out of trainee's eye sight can make a trainee feel confident and a responsible. Even in this case, you also **must** observe a trainee's action certainly (strip marking and casual behavior).



When you sit just beside the trainee, you are very much in the trainee's eye sight than you might think Every supervisor's movement will be caught in the trainee's view, and a several percentage of trainee's precious consciousness domains will be wasted. On the other hand, for a supervisor, siting just beside the trainee has a merit of being easy to make intervention, a tutorship and advice.



The supervising in other seat where you cannot observe a trainee's behavior (strip marking and casual behavior) **must not** be carried out. Even if the training is nearing completion, you **should** recognize that fault incidents might occur.

(2) Record of OJT

What supervisor can do to make De-Briefing after OJT more effective ?

The supervisor receives big load during the OJT as stated at "2. Load on a Supervisor." Even in the usual state of mind, "memory" has ambiguous character, but in an overload situation, a shade is easily attached to memory, and as a result one tend to misunderstand a precise memory is being build.

The good point having appeared in the first half is forgotten, the mistake of the second half and a weak point will become conspicuous, or details will be forgotten just as a situation becomes good.

How about utilizing characters and simple figures? (rather than depends on memory) At "Chapter 3-1 Daily Information Sharing", we proposed that a supervisor should prepare the text before speak to the OJT Training Team.



It will be good making some memo during the OJT in order to tell grasped skill level to the training team.

1) Make precise record on "what was able to do" and "what was not able to do".

Against OJT goals, let's record "what was able to do" and "what was not able to do" along with their causes.

2) Put degree of importance down with the record.

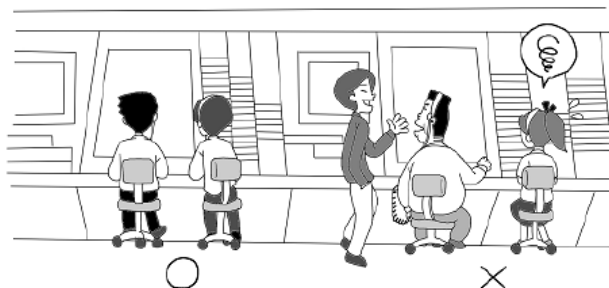
In order to carry out effective OJT, it is very effective to add an degree of importance to each tutorship subjects. Let's record. Simple sign like "O" is enough.

(3) Prohibited matters

"Neglect" is not observing the trainee's behavior. It is same as being indifferent to training. You **must not** do that.

As mentioned in "1. Basic ideas for supervising ATC training," being indifferent to the training is an attitude fall far short of ideal. Even if a trainee has some problems to be solved , as a supervisor, you **must** at least have some interest in training.

Although sometimes getting "interested in" demands strenuous efforts but just this serves as a foundation of fostering a trainee.



Moreover, you **should** recognize that from the safety point of view "neglect" is an act of high risk.

5. Ensure a supervising.

Supervising is "Reservation of efficiency which does not affect safety ". It **must** be given priority over all other matters through OJT.

Even facing OJT with various tasks, supervisor **must** always in mind that there is a line which he cannot yield.

(1) The incident factors during the OJT

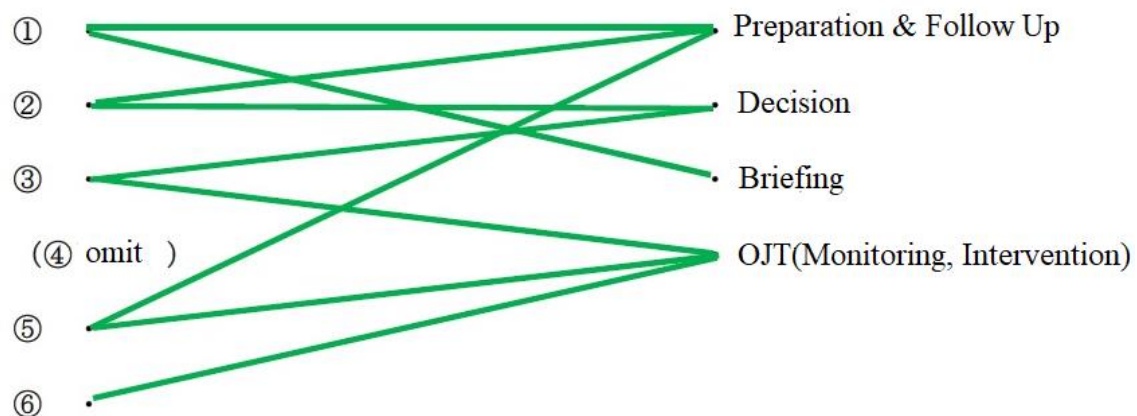
In OJT, in spite of performing control by 2 persons that is eyes and years of two persons, still incident can happen. What kind of feature is there in OJT compared with the control done by sole controller?

The following can be mentioned as the cause of the incident during the OJT.

- 1) The supervisor did not grasp the progress of training.
- 2) OJT I carried out under the operational situation which does not match of progress of training.
- 3) The supervisor had neglected the surveillance and prediction after an OJT had started.
- 4) A trainee did not spoke out that he was (traffic was) nearing at his ability limit.
- 5) The supervisor overestimated or was indifferent to the trainee and had left him a free hand.
- (6) Supervisor became absorbed in a tutorship and advice and he was not hearing communication.

What measures in the phases are most effective countermeasure?

<Exercise>



This handbook has so far described how to reduce the possibility of incidents by preparation before start of OJT.

Here we describe action guideline concerning 5) and 6) during the OJT, except for 1) which is caused by a trainee.

(2) A supervisor considers the acceptable limits of the safety for himself.

In order to ensure safety and to secure the efficiency which do not compromise the safety, the supervisor **must** always being conscious of his own acceptable limits of safety.



You **must** judge by the progress of training, trainee's condition, weak point and experience, amount of traffic, complexity of traffic, weather situation, other operational situations, supervisor's own condition, etc. Probably, a supervising's "acceptable limits of safety" differs from the time when he is controlling by himself.

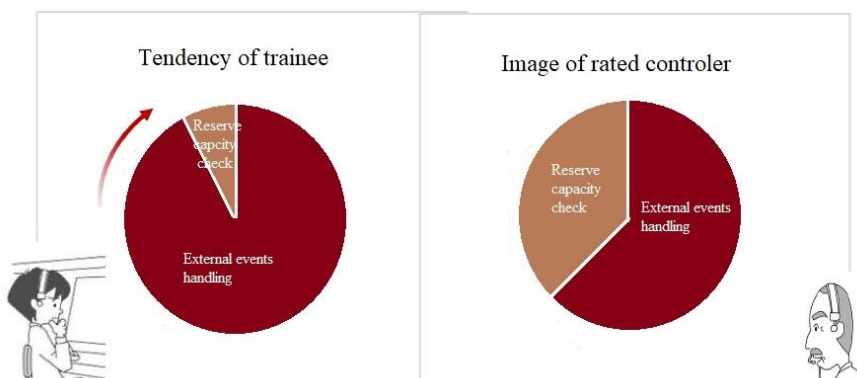
We should not look for the sole indicator common to all supervisors, but you **must** recognize that there are different acceptable limits among people.

(3) Supervise and predict a trainee's remaining power.

You **must not** leave a trainee's capacity management only to the trainee. Especially during early stage of OJT, you should think that you are doing training since a trainee cannot yet manage his own capacity limits.

The rated controller is performing "external events handling", and "reserve capacity check" with good balance.

Since a trainee has to use most capacities for "external event handling", he cannot fully perform "reserve capacity check". When self-control failed, it drive trainee farther into a tight corner, then it becomes difficult for a trainee to cope with external event. (vicious circle)



The supervisor **must** understand this tendency and has to try hard to grasp a trainee's condition.

1) The technique to check remaining capacity for external events

- *How do you sequence arriving traffic? (Ask planning)

- * What worries you now? (Are there any lacking points?)

2) The technique of recovering the check capability of "self-reserved capacity".

When you are losing your capability of "external event check", it is most likely that you are also losing check capability of "self-reserved capacity". You can regain balance by resetting the cornered state.

- * Make him breathe deeply.

- * Make him exercise light stretch.

- * "Now concentrate on the traffic." (Suggests change)

Moreover, a trainee tends to wavers in judgment or tend to be at a loss for words over trifles.

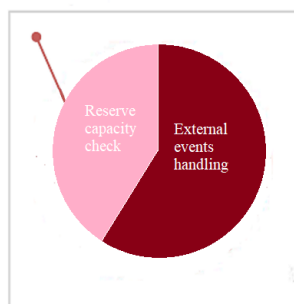
When in such cases, even supervisor become uneasy. But before making an abruptly intervention, you **should** check a trainee's state of mind first. Only observing from back, there is no telling that the trainee is just going to consider various means or just freeze.

Furthermore, the responsibility of trainee to speak out his own limits is being provided in the "Aeronautical Security Service Regulation, 5th Air Traffic Control Service Regulation, VII Training ". A supervisor **needs** to take an attitude in which he accepts the request from a trainee. Then, judge whether to continue further monitoring or not.

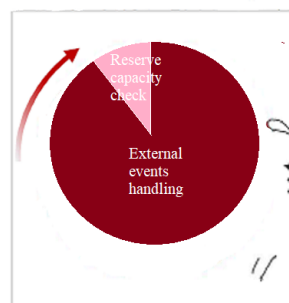
(4) Check and predict a supervisor's own reserved capacity.

It is needless to say that the supervisor needs to check trainee's reserved capacity. But he also **must** check his own reserved capacity. As stated repeatedly, supervisor should always is in complete control of traffic situation from the standpoint of safety and when necessary make cut-in without hesitation and has to succeed control. Especially inexperienced supervisor needs to improve skills together with trainee so that a supervisor's own acceptable capacity level can be raised. A reserved capacity portion serves as a watchdog and you can monitor the amount of your loads. If a reserved capacity portion decreases, you check capacity for load factor also decreases. As a result you load increase with accelerating tempo.

A reserved capacity portion serves as a watchdog and you can monitor the amount of your loads.



If a reserved capacity portion decreases, you check capacity for load factor also decreases. As a result you load increase with accelerating tempo



6. Grasping of trainee's skill level

The first objective of OJT is to grasp trainee's skill level. The supervisor **must** grasp among the goals set up by briefing what goals are attained and what goals are not yet attained. Moreover, let's grasp the skill levels about matters other than the goals.

You can perform evaluation to training only after being able to grasp a skill level.

*Among goals, what were become able to do or not able to do ?

* Did anything change about matters other than goals?

.

7. Auxiliary Tutorship and Advice

During the OJT, you **should** consider that the tutorship and advice is done as far as you can. It is not necessary to teach all during the OJT.

(1) Compatibility with a supervising

Suppose during the OJT, a supervisor addresses to a trainee eagerly. Can the trainee catch all certainly?

Time to consider a future planning goes rapidly.

I cannot catch call-in from the aircraft.

Not only trainee but the supervisor also might fail to catch the call-in

During the OJT, give priority to a supervising over a tutorship and advice. Supervisor should recognize this again. You should hold back a kind of tutorship which call on a trainee to reflect on his control.

(2) Add strength according to the degree of importance.

For the trainee under OJT his memory storage capacity tends to become small.

If supervisor talks all advice and tutorship without making any stress variation, trainee in such a state of mind will just hear them without realizing the priority among them.

Although on the side of listener, sort out of information will naturally occur, but if speaker add some stress according to the importance of the subjects, he can make more exact and more efficient transfer of information. The supervisor should talk clarifying the difference according to the subjects (strong/moderate instruction or just an advice).

*Be sure to ??. Be sure not to ?? (strong instruction=duty)

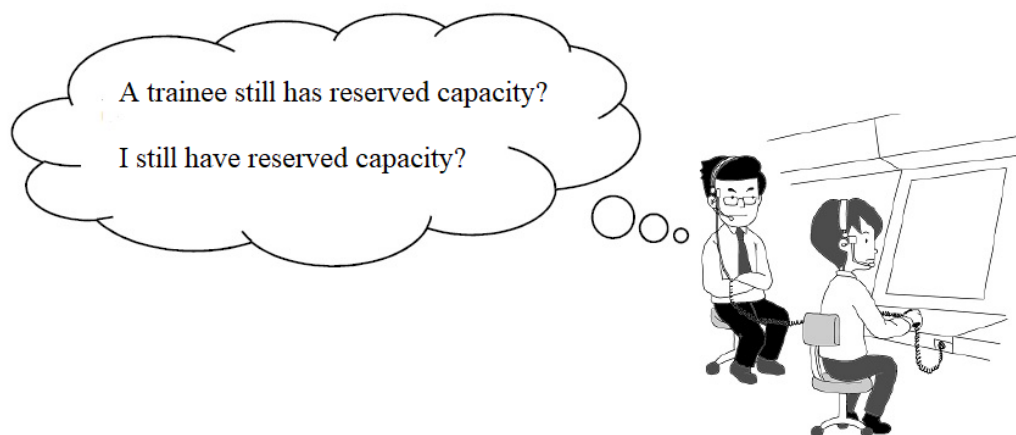
*Do ??. Because it is more effective (moderate instruction)

* This is just an advice. Why don't you ??? (advice).

Summary of Monitoring

Six essential points for both trainee and supervisor who are under heavy load situation.

- * When grasping skill level, don't depend on memory only, but utilize record with characters or figures.
- * Don't neglect nor indifferent to the trainee by any means.
- * A supervisor considers his own capacity limits for safety.
- * Check reserved-capacity for both a trainee and a supervisor.
- * Tutorship and the advice are not necessary done during the OJT. Supervisor should recognize that priority is in "Supervising".
- * When making tutorship and advice, add stress according to the degree of importance

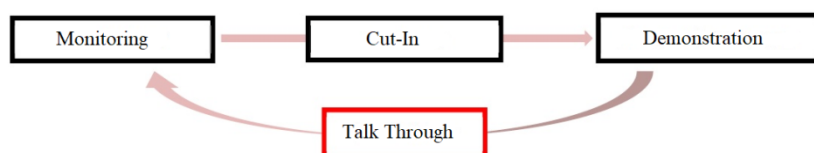


IV- II OJT (Demonstration-Talk Through)

1. Objective

The objective of Demonstration and Talk Through is to make subsequent shifts to the Monitoring smoothly, by checking trainee's prediction and planning level. As shown in the following table, in Demonstration, supervisor explains his intention of directions. Moreover, supervisor should make a trainee to participate by occasional question etc. Talk Through is the technique of delegating a part of control to a trainee while supervisor keeping final responsibility. "Talk Through" has an effect by which supervisor can confirm the trainee's level of future training plan. Although these techniques are effective at the early stage of OJT, or effective at the time of recovery from intervention, but these are not always need to be performed.

Demonstration	Talk Through
Supervisor judges.	Trainee judges.
Supervisor communicates	Supervisor communicates.
*Carry out explaining reason why. *Ask questions and make a trainee participate.	*Accept minor deviation in directions. *Carry out explaining reason why.
*Early stage of training *Under rare situation *When the trainee is facing with elementary problems	*When returning to Monitoring, after Cut-In and following control by supervisor. *When shifting Demonstration to Monitoring



2. Points to be noted

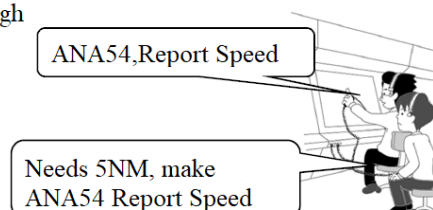
Following points also be noted.

- Since it is a OJT with explanation, carry out under light traffic.

Even if you are in the middle of explanation, if necessary interrupted considering the situation.

- In Talk Through, Since the objective of "Talk Through" is to delegate control to a trainee eventually, a supervisor needs to accept even if the trainee's instructions somewhat deviates.

Talk Through



IV-III OJT (Intervention)

OJT	OJT	Monitoring	Observation of trainee's action, Check on preserved capacity, Grasp of skill level
		Intervention	Supervisor's action in place of trainee's action

1. Objective

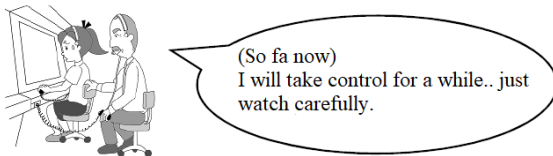
Intervention is an act of securing safety or act of securing efficiency within a warranty of good safety. In addition, there is also "Intervention" aiming at a tutorship and advice.

"Intervention" has a characteristics of shift in body of control. From the intervention till near end of intervention, responsibility of control shifts from trainee to supervisor. Here, let's master safe way of "Intervention" with this characteristics in mind.

2. Kind of Interventions

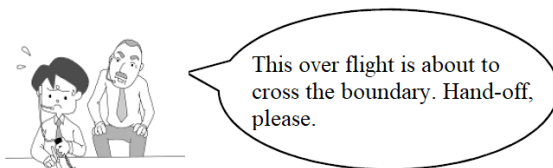
(1) Cut-In

Take up control completely from a trainee.



(2) Other than Cut-In

Interfering trainee's action by instructing actions for trainee is also a kind of intervention. In this case, leaving control to the trainee, a supervisor take control for a single shot. For example, let a trainee check pilot's read back, or let a trainee make specific instruction etc.



3. Acceptable limits for oneself

There is no set standard for timing, so it is **required** for supervisor to judge optimal timing for "Intervention", "Cut-In" etc. For this purpose, you have to prepare your own judgement criteria. In order to ensure safety, and in order to secure the efficiency within a warranty of good safety the supervisor has to always being conscious of his own acceptable limits.

4. "Cut-In" Technique

Even if the supervisor well understands the importance of Cut-In, he may miss the timing for action. At first, everybody feel "Cut-In" is difficult. Even skilled supervisors feel uncertain from time to time.

Inexperienced supervisor who do not has his own standard tends to waver. Whenever you hesitate in your mind between "Cut-In" and "not Cut-In", you **should** "Cut-In".

First, as a clue, let's classify Cut-In into some cases and deepen our understanding.

(1) Cut-In for threatening situation like Red CNF, CA, etc.

Also in order not to cross final line which must be protected by all means, when "Red CNF" or "CA" occurs, you **must** Cut-In immediately. In such a threatening situation, it is extremely risky to miss the timing. On the other hand there is almost no merit you can get by just waiting. It is obvious you have to "Cut-In" immediately.

In the threatening situations, like Red CNF and CA, "Cut-In" immediately.

(2) Cut-In due to a communicational discrepancy

In the case of Communicational Discrepancy like "Trainee did not notice his own misstatement" or "Trainee fail to notice incorrect read back from pilot", how about devising so that performing "Cut-In" may get across to a pilot.

* "Negative" --

* "Revised" --

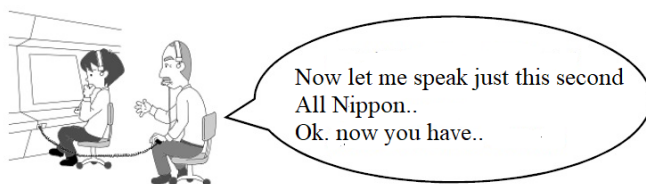
* "Correction" --

A pilot has no way to know that the ATC training is underway.(except for GCA). It is quite natural for him to like to confirm when he get an instruction which differs from the instruction received immediately second before. You must be careful, when the sex changes by "Cut-In". (male/female trainee to female/male supervisor)

(3) Cut-In which lowers a trainee's load

You **should** utilize Cut-In, not only for correction but also for recovering preserved-capacity. When a supervisor judges that a trainee's preserved-capacity is approaching his limit, or trainee himself expressed his own limit, supervisor **need** to take control for a while.

As a somewhat more advanced technique, while trainee's reserved-capacity is still left ,make Cut-In only when really necessary, thus you can lower a trainee's load, temporarily. Please utilize this as one point technique.



(4) Cut-In for protecting a supervisor's reserved-capacity

The supervisor is facing many tasks during the OJT.

When you felt , if you continue monitoring as it is, you yourself might lapse into state of own limits, you should not mind the trainee nor controllers around you. You **must** arrange your set up ready, so that you can concentrate on the traffic.

You don't have to be a "HERO".

Probably, it is better to tell a trainee the fact saying " I have to Cut-In since my reserved-capacity is now being lost".

5. Trap during the OJT

During the OJT, problems may occur because of the causes which cannot happen when you are controlling by yourself. It seems to be triggered by a misrecognition since traffic is handled by two persons, excessive meddling by a supervisor or trainee's waver for action.

Here are some incident examples during the OJT. Do not put away these cases as a somebody else's affairs. Please utilize them on the assumption that you also may cause this kind of mistakes.

Forget oneself in teaching.....

*The supervisor who has noticed the misdirection in the trainee's instruction said "No!".

*The trainee responded immediately, instructing "Disregard" to pilot.

*Immediately after the trainee said "Disregard", supervisor began oral tutorship to the trainee on the spot.

*But the trainee's intention of cancellation by "Disregard." did not get across to the pilot.

*Both supervisor and a trainee did not notice that the pilot's read back was incorrect.

*And with the misdirection by trainee, the pilot end up in "near miss" with other aircraft.



Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

Distracted by a trainee's way of -- -

The trainee instructed descent to 3000 ft. to the aircraft establishing initial communication. Before aircraft A, the trainee was instructed aircraft B to climb to 3000 ft., but he had forgotten this. Although the supervisor recognized existence of aircraft B, he was distracted by the trainee's way of arranging strips (It was different from supervisor's arrangements.) and failed to recognize climbing aircraft B.

Both aircraft gradually approached each other unnoticed by trainee nor supervisor. Although evasive direction was issued, the pilot fail to acknowledge this in a single transmission. Both aircraft executed evasive maneuver following the TCAS warning.

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

This incident happened at the early stage of training--

For the trainee the position was his first training seat and it was only one month since the training started.

The supervisor did not fully grasped neither a trainee's training record nor his skill level.

Aircraft A was climbing to FL260. Aircraft B was at FL350.

Routes for air craft A and B crosses each other. The trainee judged from the climb rate of air craft A , that A can climb through the FL350 with ample separation. The trainee issued continue climb clearance to aircraft A. Aircraft A's climb rate was decreased as she climbed. As the result aircraft A and B were fell into a near-miss situation.



Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

They felt kind of relief since training was at final stage, but the relief backfired on them. -- -

*A trainee was at the final stage of training and was expecting the recommendation meeting at the end of the month.

*The supervisor also recognized the skill level of training correctly.

*The trainee was at busy local seat. He issued landing clearance to arrival aircraft.

*Then departure aircraft called up. The trainee instructed to the aircraft to hold short of runway.

*The supervisor had trusted the trainee completely and was not monitoring communication intently.

*The departure pilot replied "????", but he crossed the stop line and taxied into the runway.

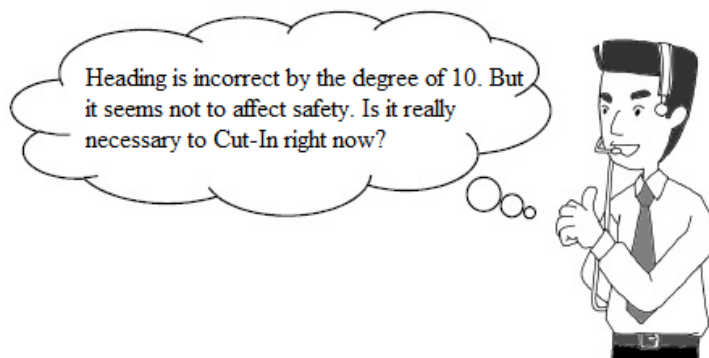
*Both a trainee and a supervisor did not notice this. As a result arrival aircraft executed go around by his own accord

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

6. "Intervention" without necessity

A supervisor has an inclination to give many tutorships and advices to a trainee. However, it is important to look back upon whether they were truly required during the OJT or were there any other means. When correcting a trainee's mistake, you also **should** judge whether "it should be corrected immediately" or "you can correct it later." For that purpose, the supervisor himself **needs** to recognize "What are the important matters and what are the auxiliary matters."

Overabundant intervention may check trainee's mind shift to the spontaneous motivation.



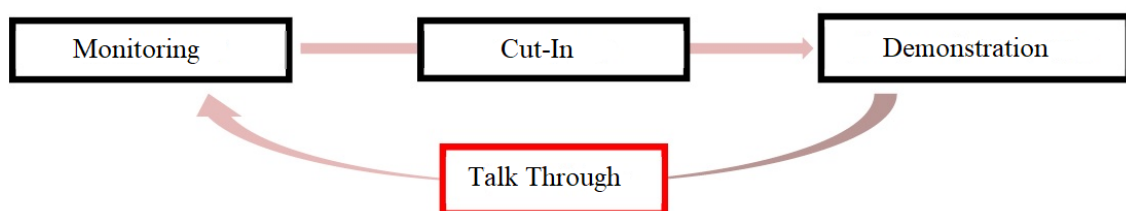
7. Resume Monitoring after Cut-In

When resume Monitoring after Cut-In, the body of control returns to a trainee from a supervisor. You **should** recognize that some risk will accompany at the time of control shift.

A supervisor **should** return to Monitoring, after discerning well whether the trainee understands the traffic situation. If it seems that the trainee has not yet caught up, supervisor should explain about his directions issued and the matters concern immediately after shift.

In order to make control shift smoothly, how about utilizing "Talk Through". At this section, regarding the state of continuous "Cut-In" as a kind of "Demonstration", here I introduce the technique of returning to Monitoring via Talk Through from Demonstration.

Demonstration	Talk Through
Supervisor judges.	Trainee judges.
Supervisor communicates	Supervisor communicates.
*Carry out explaining reason why. *Ask questions and make a trainee participate.	*Accept minor deviation in directions. *Carry out explaining reason why.
*Early stage of training *Under rare situation *When the trainee is facing with elementary problems	*When returning to Monitoring, after Cut-In and following control by supervisor. *When shifting Demonstration to Monitoring



"Talk Through" has an effect by which supervisor can confirm how well the trainees can visualize his own future training plan Furthermore, a trainee can materialize his own idea rapidly by participating in judgment.

By performing Talk Through, the trainee will participate in judgment and that help him returns to the before "Intervention" state easily. Since returning "the control" to the trainee is the final objective, a supervisor needs to accept even if trainee makes somewhat off the mark instructions.

Summary of Intervention

Five points for giving priority to securing safety

- *What is my standard for "Cut-In" ?
- *For threatening situation like Red CNF, CA, etc. Cut in immediately.
- *Recognize the incidents which likely happen during the OJT.
- *Recognize that too much intervention may have harmful effects on progress of training.
- *When resume Monitoring after Cut-In, it should be done after making a trainee well understand traffic situation.

Chapter 3-3 Review

Review is very important occasion, which directly influence the effect of OJT.

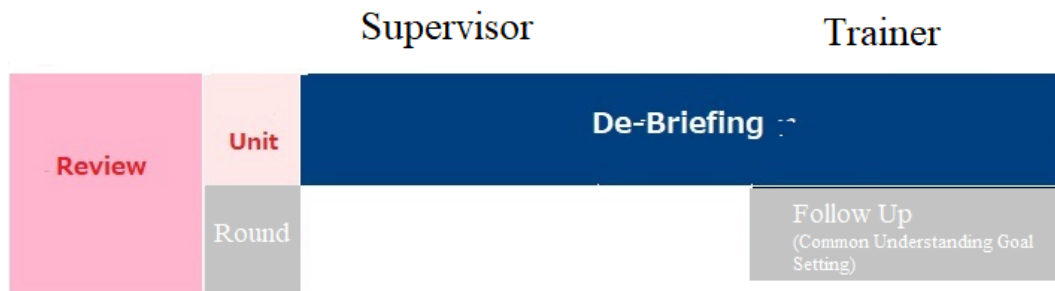
Since supervising is the Trinity of "Preparation+OJT+Review", for a supervisor it is quite insufficient just finishing the OJT. Supervisor **must** carry out to Review.



V Debriefing [every one training unit]

Let's divide "Review" into "what is performed as a supervisor", and "what is performed as trainer", and consider them. Among these, what is performed as a supervisor is called "De-briefing".

The supervisor **must** perform Debriefing for every one training unit of OJT, before memory of OJT fades out.



1. Objective

The objective is to enlarge the effect of the OJT by notifying to a trainee about the evaluation to the goal of the OJT concerned. This is the act of amplifying the future effects, supervisor **must** always debrief with forward looking attitude.

Although main direction of information transfer is from supervisor to a trainee but let's try to communication be bidirectional.

By performing debriefing certainly, a supervisor can make well-grounded persuasive remarks when informing evaluation of the trainee or making advice or tutorship to other supervisor or

trainer.

2. Transfer of evaluation, and effective Tutorship and Advice

The supervisor **must** inform trainee evaluation of OJT. Moreover, you should inform trainee Tutorship and Advice at not during the OJT but at the Debriefing.

(1) Ask a trainee his impressions.

First of all, supervisor let a trainee speak about the impressions of the OJT.

By outputting, one can input effectively. If you would like to perform Tutorship and Advice effectively, let's start with asking a trainee's impressions.

(2) Talk about positively evaluable points.

Next, the supervisor **must** talk about the positively evaluable points during the OJT.

Good parts have to recognize as "Good" otherwise the trainee might take wrong selection next time.

You have to accept "good part" to give confidence to the trainee. Moreover, let the trainee re-recognize that he is under supervising. When talking about the good points, let's make it specifically.



* △ "It was good."

* ○ "It seems to me, at first you haven't noticed effect of upper wind. But from the middle of training, you noticed disorder in the traffic flow from the deviation of flight tracks. You made correction. It was a good point. Even about matters other than the goals, look for the positively evaluable points and inform trainee the points. Even if they are minor points it is a good thing to do. This makes trainee easy to accept become easy for a trainee to accept indication of a shortage point, and a future subject by carrying out like this.

(3) Speak about shortage points and new subjects.

Next, the supervisor **must** tell about a shortage point.

A. Remember the matter which was a goal of the OJT concerned.

When supervisor talks about the shortage points of training, he **should** conscious of whether the shortage points were within the limits of the goal shared in advance, or not included in the goal. A trainee tends to give priority over the goal set up in advance. You **should** talk about the "shortage point" after understanding that the shortage itself might be the result of the achievement of goals.

*About goals: What was accomplished or what was not yet accomplished.

*Other than goals: Did any change have occurred?

B. Talk mainly about future tasks.

Not only inform unidirectional from trainer to trainee but also ask the trainee what he himself was thinking or what he thinks about the cause of problem. In this way you can talk with a trainee.

* When you ***** to ANA123****, why did you do that?

* Why did you overlooked JAL345"?

This is talking about past event with the intention of maximizing the future training effectiveness. "What can you do for future tasks?" This is the question mainly focusing on future tasks. A supervisor is **expected** to act remembering an original goals always.

C. Add stress according to the degree of importance

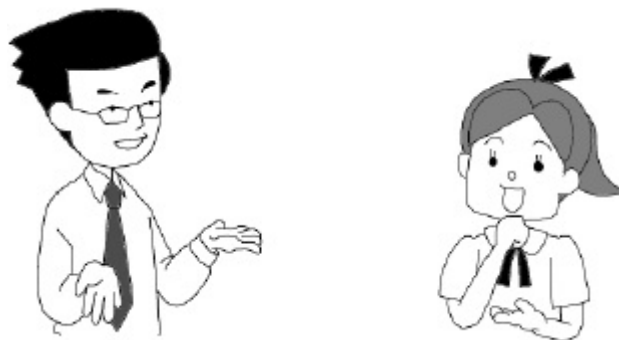
The trainee who just finished OJT has exerted his thinking capacity greatly, and there is a possibility that his memory become smaller than usual. If supervisor talks all advices and tutorships without making any stress variation, trainee in such a state of mind will just hear them without realizing the priority among them. Not informing all subjects with same level of importance but, supervisor should add some stress according to the importance of the subjects. You should clearly specify which one has a greater importance a "Tutorship" or an "Advice".

* Be sure to???" Be sure (absolutely) no to ??? (A strong tutorship = duty)

* Do?????. Because it is more effective.(Tutorship)

* This is just an advice. Why don't you ????? (Advice)

Too much stress **should not** be put on a simple mistakes, like "the reply to the request from an air plane was slow", which results from trainee's inexperience.



Debriefing summary

Five points for enlarging the effect of OJT

- * First a supervisor should starts with asking a trainee about impressions of the OJT.
- * Tell positively evaluable points in the OJT.
- * With goals of the OJT in mind, tell shortage points.
- * In order to make future training more effective, keep a bidirectional dialog in mind.
- * Carry out "Tutorship" and "Advice" according to the degree of importance.

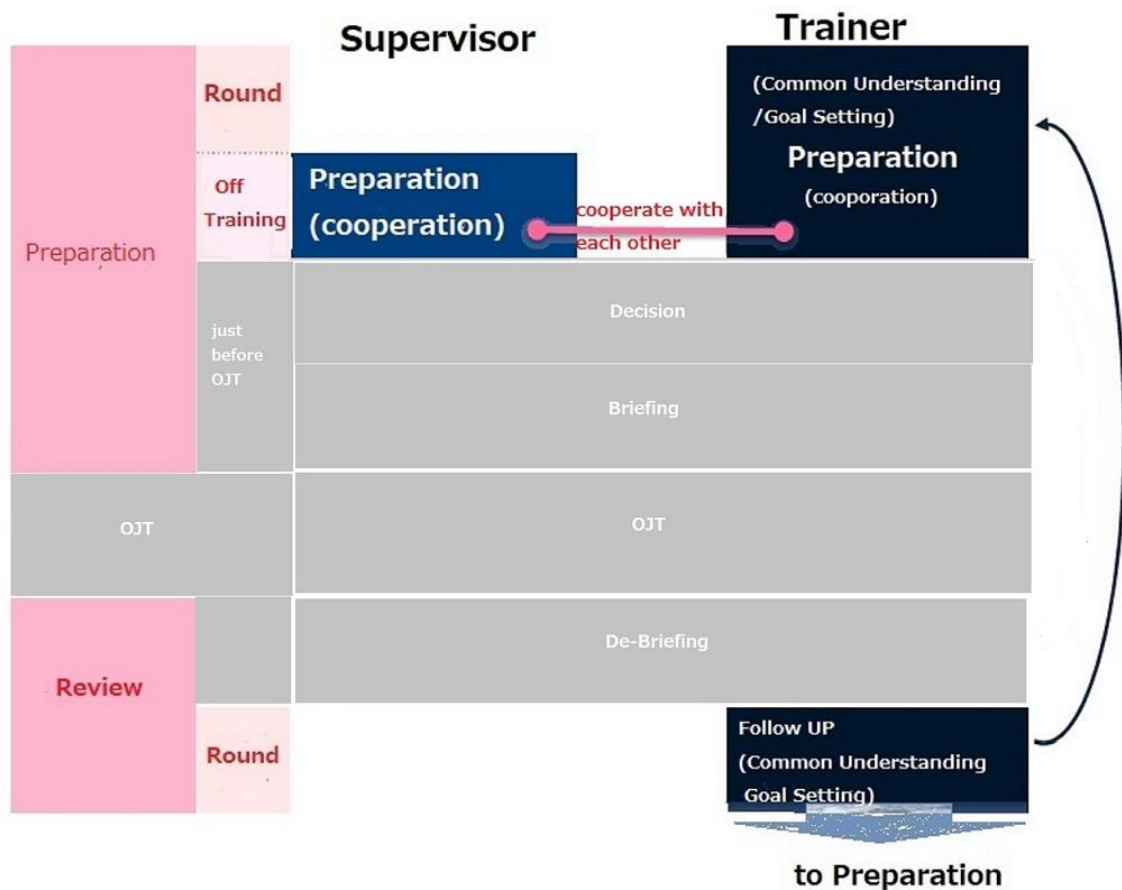
VI Follow-Up & Preparation [off OJT]

Follow-Up is a phase in the "Review" and is carried out by a trainer.

Based on training of one round, it **needs** to be carried out at the comfortable place with ample time.

Like Debriefing, the trainer should not stop at reflecting on the past but should focus on the subjects which they can do now for the future. Therefore, let's combine with "Preparation" and think as "Follow-Up & Preparation."

For details, reconfirm the contents of "Chapter 3-1 Preparation". All is described there.



Appendix 1. Required Knowledge and Skill for Training Supervising

Flow in a Round	Required Knowledge and Skill for Training Supervising	
Understanding Of Trainee's Psychology	Recognize the fact that a trainee and a supervisor are member of the project with same goals.	
	Reconfirm trainee's uneasiness by remembering the fact that you yourself once were a trainee.	
	Recognize that communication is required not only for a trainee but it also required for smooth supervising.	
	Help so that a trainee can convince the meaning and value of the task at hand.	
	Explore what is the "relevant difference" for a trainee.	
	Make the task seem easy for trainee.	
	Give trainee a supportive push forward.	

Flow in a Round	Required Knowledge and Skill for Training Supervising	
Preparation & Follow Up	[Supervisor & Trainer]	
	Deepen an understanding about the training phases of the office and an assessment sheet.	
	Utilize a written text so that you can express your opinion with convince.	
	[Trainer]	
	First, ask a trainee's impressions about training of the round.	
	Collect evaluations from other supervisors and inform other supervisors a future goal and guideline.	
	[Trainer & Trainee]	
	Talk about positively evaluable points at the round.	
	Talk about shortage points at the round.	
	Set up effectively middle and long-term goal.	
	[Supervisor]	
	Grasp progress of training by getting information from OJT, communication with other supervisor, evaluation sheets.	
	Inform OJT training team evaluation of the training.	
	Make advises to the policy of OJT training team and make it develop.	

Flow in a Unit	Required Knowledge and Skill for Training Supervising	
Decision	After comparing the progress of training and the operational situation, judge the start of OJT and select OJT technique.	
	Supervisor should recognize it as a phase required in order to carry out a supervising certainly.	
	Supervisor should recognize that the OJT environment also affects a trainee's motivation.	

Flow in a Unit	Required Knowledge and Skill for Training Supervising	
Briefing	Don't give a trainee negative psychology pressure.	
	Orally confirm necessary points in a following subjects, a trainee's weak points, experience of the same situation, prediction of the situation or physical condition and psychological condition of the day.	
	Set up priority goals for the OJT specifically.	
	Inform trainee OJT technique. (Monitoring, Talk Through, Demonstration)	
	Explain the timing of Cut-In, and the frequency of other interferences to a trainee.	

During OJT	Required Knowledge and Skill for Training Supervising	
Monitoring	Understand that various loads are on the supervisor during the OJT.	
	Understand the effects of supervisor's relative positioning on a trainee.	
	For grasping skill level, don't depend on memory only but utilize record with character or a figure.	
	Be interested in training. Do not neglect nor indifferent to the trainee's action. (Not observe trainee's actions.)	
	A supervisor considers his own capacity limits for safety.	
	Check reserved-capacity for both a trainee and a supervisor.	
	Tutorship and the advice are not necessary done during the OJT. Supervisor should recognize that priority is in "Supervising".	
	When making tutorship and advice, add stress according to the degree of importance	

During OJT	Required Knowledge and Skill for Training Supervising	
Intervention	Think about one's own standard for "Cut-In".	
	For threatening situation like Red CNF, CA, etc. Cut in immediately.	
	Recognize the incidents which likely happen during the OJT.	
	Recognize that too much intervention may have harmful effects on progress of training.	
	*When resume Monitoring after Cut-In, it should be done after making a trainee well understand traffic situation.	

Flow in a Unit	Required Knowledge and Skill for Training Supervising	
Debriefing	First a supervisor should starts with asking a trainee about impressions of the OJT.	
	Tell positively evaluable points in the OJT.	
	With goals of the OJT in mind, tell shortage points.	
	* In order to make future training more effective, keep a bidirectional dialog in mind.	
	Carry out "Tutorship" and "Advice" according to the degree of importance.	

Flow in a Round	Required Knowledge and Skill for Training Supervising	
Preparation & Follow Up	(above mentioned)	

Appendix 2. OJTI Pocket Checklist

Decision

- ☐ After comparing the progress of training and the operational situation, judge whether to start OJT and select OJT technique.
- ☐ Supervisor should recognize it as a phase required to carry out a supervising certainly.
- ☐ Supervisor should recognize that the OJT environment also affects a trainee's motivation.

Briefing

- ☐ Don't give a trainee negative psychology pressure.
- ☐ Reconfirm progress focusing on trainee's shortage points.
- ☐ Set up priority goals for the OJT specifically.
- ☐ Inform a trainee OJT technique. (Monitoring, Talk Through, Demonstration)
- ☐ To the trainee, explain Cut-In timing, and the frequency of other interferences.

Decision

- ☐ After comparing the progress of training and the operational situation, judge whether to start OJT and select OJT technique.
- ☐ Supervisor should recognize it as a phase required to carry out a supervising certainly.
- ☐ Supervisor should recognize that the OJT environment also affects a trainee's motivation.

Briefing

- ☐ Don't give a trainee negative psychology pressure.
- ☐ Reconfirm progress focusing on trainee's shortage points.
- ☐ Set up priority goals for the OJT specifically.
- ☐ Inform a trainee OJT technique. (Monitoring, Talk Through, Demonstration)
- ☐ To the trainee, explain Cut-In timing, and the frequency of other interferences.

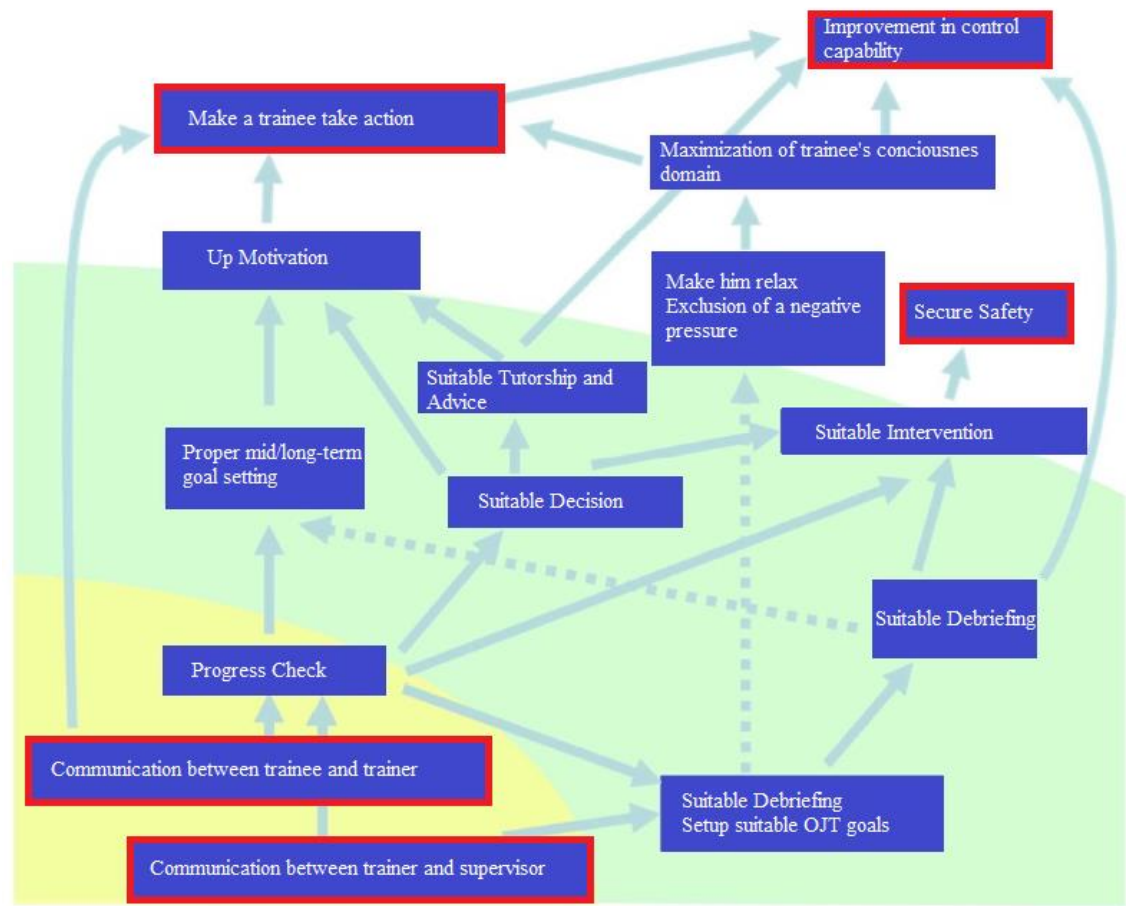
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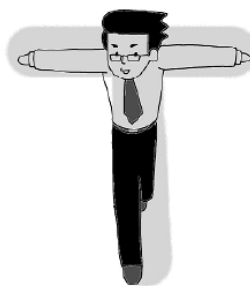
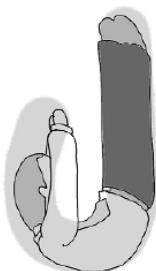
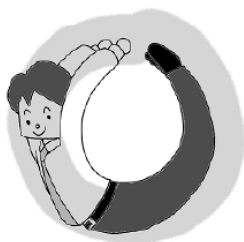
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Appendix 2. Whole Image of Supervising Training.





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**STATE UNITARY ENTERPRISE
“TAJIK AIR NAVIGATION”**



Draft ver1

**THE
OJT INSTRUCTOR
HAND BOOK**

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Basic idea

1. Basic ideas for supervising ATC training.

This handbook was prepared for reference when the OJT instructor (hereinafter referred as "Instructor ") instructed the trainee. A OJT instructor is appointed by the Head of the ATC, as who perform supervising, tutoring and advising a trainee at the OJT based on Civil Aviation Rule part 21" Air Traffic Control Services in RT"

Fostering trainees should be a business of the whole organization, and each Instructor must address to training with fully understanding of the contents of the operation manual and the job description such as tower control, approach control, radar control, area control.

If an Instructor appointed by Head of ATC is being indifferent to the training, it is an attitude fall far short of ideal. Even if a trainee has some problems to be solved, as an Instructor, you have to at least have some interest in training. Although sometimes getting "interested in" demands strenuous efforts but just this serves as a foundation of fostering a trainee.

An Instructor accept the feedback from the others and must turn the cycle of an improvement while he himself study his supervising from an objective perspective It is same with the daily control business, to utilize daily reflection to improve control next time.

As you might know the coverage of the section of this hand book, as the specific technique of supervising training, "Preparation" (Preparation, Decision, Briefing) before beginning OJT is most important. It is not an overstatement saying Preparation holds the key to success of supervising training.

Now, not only an Instructor but also a trainee's efforts are indispensable to training. An Instructor and a trainee are both project members who jointly progress toward the same goal. It should be recognized their relations are "FLAT" one. Since it is a flat relationship, in order to progress training more effectively, sharing information and seeking better policy is natural way of doing training.

Now, based on the knowledge of definition and explanation of words and phrases of this hand book, let's learn about the specific technique of a supervising a training after deepening an understanding about the supervising and roles of an Instructor and trainer.

2. Roles of this Handbook.

This Hand Book will set a guideline for specific technique to materialize effectively the contents referenced in OJT- Instructor HAND BOOK in Japan.

- A) The word "**must**" mean an indispensable matter.
 B) The phrase "**must not** " means a prohibited matter.
 C) The words "**required**", "**necessary (need)**", "**should/should not**", "**recommended**," called **for**," expected" are used when describing about goal(s).

- D) The word "why not" means advice or proposal.
 E) The word "can" mean effects by implementation.
 F) The words "may", "probably" means a hypothesis, an assumption, a guess, or a proposal.
 G) The word "is/are/was/were" means theoretical instruction.

Words selection for A, B and C should not be based on personal preference. Use of the predefined word is necessary to attain the training objectives effectively. It also helps sharing common understanding in the organization.

By A and B, the contents provided in the "5th ATC Regulation VII Training Implementation Procedure" are stated. (And it **must/must not** be practiced.) For item C, it is not necessarily mandate, but each Instructor **should** practice them as much as possible. And for insufficient subjects you are expected to take actions for improvement.

3. Definition of words and phrases used in this Hand Book

Trainee	Refers to the non-certified ATC people. (Except people who are slated for certification.)
Instructor	Refers to the personnel who perform the supervising, tutoring and make advices to the trainee during the training for ATC specialist.

OJT	Refers to actual time when trainee is communicating with pilots, coordinating with controllers at other positions or other organizations, operating ATC equipment. It also includes the time when Instructor himself is doing control.
Supervising a Training	Refers to whole period of training that is OJT plus "Preparation" before "OJT" plus "Review" after OJT. [Supervising= Preparation + OJT + Review]
Evaluation	Refers to a whole process of evaluation, "skill level", "possibility of move on to next phase". Among these, an Instructor performs the final check on skill level.

Chapter 1 Structure of Supervising

Supervising (Preparation-OJT-Review) always has "double aspects. Those are "safety" and "education". Safety preserving aspects is called "Supervising" and education aspect is called "Tutorship and Advice." Although now it is already carried out automatically but if you are aware of the two aspects you can understand supervising more deeply.

It is **required** for Instructor to supervise properly first, then concentrate on Tutorship and Advice.

Especially you **must not** neglect supervising for the sake of tutoring and advising.

1. Supervising

Always, be aware of the present and future traffic situation and weather conditions. When it is considered not acceptable considering the skill level of the trainee, interrupt the OJT concerned. Moreover, when it is considered that the trainee's communication with the pilot or coordination with other organizations or coordination with other control seats might affect acceptable level of safety or efficiency of the control, Instructor should take corrective actions. If necessary, Instructor should take up the communication and make corrections by himself.

2. Tutorship and Advice

In order to master or expand trainee's lacks knowledge and to meet the criteria set out according to the trainee's progress, Instructor will perform instruction, guidance or proposal. These will be materialized when a "supervising" is ensured.

3. Understanding of trainee's psychology

In fostering a controller, "establishing a strong confidential relation" is most important. The strong confidential relation between the "teach side" and "taught side" serves as an effective element for growth.

Then, what are the elements to build a confidential relation? For building a confidential relation, first recognize a concern of the trainee. Then with this recognition as a base take communication with trainee is necessary.

With this confidential relation as a base next step is to make trainee to take actions.

(1) Build a confidential relation

A trainee and an Instructor are project members with the same goals of helping a trainee (by himself) to master required skills. From this perspective the relationship is "FLAT".

First, if the confidential relation between members is not firm, go on to the next step (make

trainee take action) will be difficult. With satisfactory confidential relation's, training will progress smoothly.

A) Recognize uneasiness of a trainee

Why is it necessary to recognize uneasiness of a trainee? The objective is to build a confidential relation. This does not mean to adjust your opinions and take behavior to please trainee. I could say it is enough to remember the situation when you yourself were a trainee.

1) Remember what you experienced

Here, first, you place yourself in a trainee's position then think what the trainee might feel. For example, when you enter an elementary school, or you start to work for the first time, etc. Probably you felt big uneasiness when you were faced new environment or situation.

Uneasiness now trainee is feeling is just the same as you felt once. Since the Instructor has experienced a trainee, the base to appreciate trainee's uneasiness is ready at hand.

2) To understand the reasons of uneasiness

The following is one of the reasons for uneasiness.

#Insecurity over oneself

Can I do well in this office?

I might make some mistakes?

First, what shall I start with?

#Meet with unfamiliar people for the first time.

What kind of a person is he/she?

Can I go well along with the team?

They might dislike me?

#Unfamiliar environment

Where is the training room?

Where is the toilet?

This local region is pretty cold.

Can you remember uneasiness which a trainee feels?

Even if you remember once, you might tend to forget, since now you are in teaching position. If you have your own record of training, let's look back upon it. You had better to think out a device or a way so that you can remember periodically.

B) Communication

Why communication with a trainee is so important?

Although their standing positions differ, a trainee and an Instructor are both project team member who make progresses sharing same recognition. To improve communication is natural and necessary things to do for the team.

Moreover, as described in the following section, good communication is the key to make a trainee to take actions. That is, communication is required not only for a trainee, but it also required for smooth supervising.

C) To maintain a good relation between a trainee and an Instructor.

Since the trainee is insufficient in knowledge and in skill, from the perspective of teaching, there exists some "Slope" between the standing position of the Instructor and trainee.

A pertinent "Slope" may be necessity. However, you should be always attentive not to evaluate the trainee's personality.

Moreover, you must always check your feeling. It is **necessary** not to let your feeling out of control.

Summary of Establishing Confidential Relations

Three premises for the establishing confidential relations used as the foundation of communication

- *Reconfirm trainee's uneasiness by remembering the fact that you yourself once were a trainee.
- * Recognize the fact that a trainee and an Instructor are member of the project with same goals.
- *Recognize that communication is required not only for a trainee, but it also required for smooth supervising.

(2) Make a trainee to take action.

I do not see the reason why a trainee does not voluntarily tackle the training. How can I motivate trainee? When teaching something to the student this kind of feeling is common not only with Instructor but also with all people. How Instructor can stimulate trainee's voluntarily intention for action. It may be useful to know the natural mental characteristic of human being for promotion of spontaneous action.

* Since training is treating people, there might happen difficult cases. Even if you tried hard you might not get the result you expected from the trainee, but you need not feel you are responsible. Please read this section not as a guideline for action, but as a hint for increasing the number of choices for training techniques.

A) Three elements which make people to take action.

Three elements which make people to take action.

- 1) Motivation : Motive to make one want to take action.
- 2) Ability : Easiness one feels to do task.
- 3) Trigger : Cause to take action.

1)-1 "Motivation" is the key for action

The goal for a trainee is "To master a required skill and get qualified ". However, there is a tendency that the longer the training period the less the final goal functions as motives for daily action. For the trainee, daily training weighs heavier than the far away goal. Even if a trainee can bear the "high spirit" for the task at hand, it will be difficult to keep "high spirit" till the final goal. Here, in order to achieve our goal more certainly and effectively, let's study more concrete way to heighten motivation.

There are two kinds of motivations.

External motivation: Bonus, punishment, etc.

Spontaneous motivation: Motive based on the necessity or self-fulfillment.

Externally inspired motive has temporally effects to urge people for action but, it is not practical to continue giving a bonus and punishment forever. Their effect tends to fade in the long run. On the other hand, spontaneously, inspired motivation is coming from one's own accord and it will be expected to have consistency. More over forward-looking attitude has a good effect psychologically on both sides. During the process of training, an Instructor hopes that he can support successfully the trainee's shift from external motive to spontaneous motive.

1)-2 Internal -> Spontaneous How-to device smooth shift.

The "convince" will trigger action.

One will step up spontaneous motives by;

- 1) Understand meaning and values of the task. That is "Convincing". That makes you to take positive attitude.
- 2) With positive attitude you will get a lot of practical experience
- 3) From the experience you get self-confidence and satisfaction

In the early stage of training, a trainee tends to hesitate to take actions, since a trainee does not yet "Convince" the meaning or value of the task. When in such cases, the Instructor can back up trainee to strengthen spontaneous motivation by giving "words of advices to convince" or "a chance to try out by their own accord".

The "adequate Difference" triggers action.

One seldom gets interested in the matters without familiarity. On the other hand, for matters one knows very well also inspires hardly interest. Often it is the objects with "adequate difference" that inspire interest and motivation.

Then how much is the "adequate difference"? It varies among individuals or times. We cannot say for sure how much is correct.

However, the most effective way is that the Instructor always grasps a trainee's present condition and the gap with the task a trainee has given at the moment.

* Set up the goal with "adequate difference".

* Perform OJT under the situation which has "adequate difference" gap.

When motivation level is fixed at the low level, let's not try to raise the motivation level, rather adjust a task level low enough to meet motivation level.

2) Ability

Speaking of ability, it is common to be understood as "one's ability to cope with the task". When the trainee's ability to cope with the task is high enough, naturally it will be easy for trainee to take actions.

However, the ability of air traffic control does not improve in a short time. Then, besides improving the ability to cope with the task, the technique of heighten ability, i.e., the technique to make believe that the task is not difficult is effective. Make trainee feel he can do it by presenting the task seems easy will convince trainee that he can handle the task. It will increase the possibility to bring out the actions in a trainee.

3) Trigger

When motivation and ability is ready with sufficient balance, then all that you have to do is to give trainee a supportive push forward. Only advising by saying "Now is a time of action", or "Action is called for" will make a trainee take action.

B) Summary

In order to make one to take action, following three approaches are points.

- (1) Set up a goal/situation to increase motivation.
- (2) To increase ability that is to make one feel that one can do the task by oneself.
- (3) Give trainee a supportive push forward by giving a trigger.

When the advice and the proposal in these viewpoints are tried to a trainee to take action, one of these may take effect.

Summary of Making a Trainee to Take Actions

Four hints to bring out trainee's action

- * Help so that a trainee can convince the meaning and value of the task at hand.
- * Explore what is the "relevant difference" for a trainee.
- * Make the task seem easy for trainee.
- * Give trainee a supportive push forward.

Chapter 2 Role of Trainer in Charge and Instructor

1. Relation between Trainer and Instructor

Let's think the relationship (stated in the "Ideal Education and Training of Air Traffic Controller") between trainer and Instructor by applying to the real training supervising.

Trainer plays an important role in the OJT training team centering on a trainee. It is classified into following three subjects that the trainer should take a lead more than other Instructors.

The trainer must establish good communication with a trainee, and **must** set up a goal. Moreover, trainee **must** share a goal with other Instructors and **must** check the guideline for the time being. Trainer also has to collect the evaluations of training to the trainee by other Instructors.

On the other hand, the Instructor has to grasp the goal set by the trainee, and **must** contribute to suitable management of an OJT training team by expressing his opinion about the goal or making the evaluation to a trainee's training to the trainer.

2. Six training phases of supervising. "Preparation (3) +OJT (1) +Review (2)"

Divide "Supervising" along the time-axis.

It is roughly divided into three-time periods, the OJT period and before and after the OJT period. We will call these "Preparation", "OJT", and "Review."

Furthermore, "Preparation" can be sub-divided into three phases (Preparation, Decision, Briefing) and "Review" can be sub-divided into two phases (De-Briefing, Follow-Up) respectively.

If the decision is not accurate, the effect of OJT will not only decrease, but also may have bad influence on a trainee's motivation. Moreover, proper briefing can prevent the mistake during OJT in advance.

Description in "ATC training (To have the time to discuss with Instructor and trainee at every round.)" indicates "Follow Up" and "Preparation".

3. Two techniques of OJT

Let's deepen an understanding about OJT which is a core element of supervising

There are two important techniques for OJT, "Monitoring" and "Intervention". During the OJT period, more stress is placed on supervising aspects than "Preparation" or "Review". Instructor **must** always be careful not to pay too much attention to "Tutorship and Advising" and end up paying less attention to "Supervising".

4. Specific role sharing of Trainer and Instructor

Among six supervising phases, roles for "Follow-Up" and "Preparation" differ between Instructor and trainer.

Role sharing in Follow-Up & Preparation

As a main member in an OJT training team, the trainer should communicate closely with the trainee. Out of all members trainer **must** grasp and understand training most. Then inform the Instructor that information and from Instructor collect his evaluations and opinions. This is the "Follow-Up" and "Preparation" for trainer. The Instructor **must** grasp the goal which the trainer and trainee had set up. He has to promote training to the more suitable direction by expressing an opinion about the goals or by telling the evaluation of training by a trainee to a trainer.

The common subjects to both a Instructor and a trainer is, by seizing an opportunity of training meetings and cooperate with each other (including off OJT times), to establish more effective collaborative system.

Chapter 3 Six Supervising phases

Chapter 3-1 Preparation

For supervising, you **must** ensure Preparation. Appropriate preparation makes big difference in the effect of OJT. It might also influence the safety.

The Instructor **must** understand that a supervising is the "Trinity" of "Preparation" + "OJT" + "Review."

I Follow-Up & Preparation [including off OJT]

Let's divide "preparation" into what is performed "on the day of training" and "during off the training (OJT)". Preparation refers to the preparation performed during off the OJT training.

The "Preparation" which focuses on the future is indivisible from looking back upon the past. Let's consider "Preparation" and "Follow-Up" in a Review (will refer later) performed after every round as one thing.

As a trainee makes preparations for OJT during off the training, an Instructor also **must** make the preparations for supervising.

1. Objectives

Appropriate "Follow-Up" and "Preparation" will have following effects.

With appropriate "Follow-Up" and "Preparation" one;

- (1) can exclude OJT under the environment which does not suit a trainee's skill level.
- (2) can set up suitable OJT goal.
- (3) can reduce the problems during the OJT resulting from a supervising.
- (4) can avoid irrelevant evaluation to a training by a trainee.
- (5) can heighten the training effect over each OJT.
- (6) can manage trainee's stress effectively.

As you see from this exercise, "Follow-Up & Preparation" is important phase. This phase serves as the foundation of other phases. If nothing is prepared, you tend to fall into leaving-a-matter-to-chance training. For supervising, you **must not** apply the idea of "During the air traffic control, there is no telling what may happen, so act flexibly according to circumstances." Unlike the control you yourself perform, a trainee in a supervising will be directly affected.

Now, let's study about "Follow-Up and Preparation" performed by trainer and Instructor.

2. Common understanding with trainee (as a trainer)

For trainer "Follow-Up & Preparation" start with establishing common understanding with main actor of the training the Trainee. The common understanding becomes more substantial by maintaining the idea all through the training.

The description "to have the opportunity for a trainee to talk with trainer at each round " in "Ideal Education and Training of Air Traffic Controller" has pointed out this very "Preparation and Follow-Up". Bearing in mind the relation with "three points in which trainer should perform leading role", let's deepen our understanding about a specific point to be considered during the training.

(1) Make a trainee feel relaxed (as trainer).

A. Place and relative sitting position...

Let's do preparation at the calm place other than the control room where both can talk frankly each other. Moreover, it will be good to sit not "face to face" but "sit "side-by-side". Trainer and a trainee mutually could understand a more deeply by sitting down facing same direction, since they are the project members who make progress toward the same goal.

B. What is the intention to make trainee feel relaxed?

It is not for spoiling a trainee. The trainee, by and large, always has the feeling of being monitored by Instructor. Just preventing a trainee falls into negative state of mind, such as fear concern or dislike, the possibility of a trainee reacting and expressing more frankly will increase. Moreover, it become easier for trainee to accept or recognize own weak point. By carrying out like this, we could deepen common understanding.

C. A specific technique

Outstanding humor or the like is unnecessary. It will be effective to use an innocent chat as an introduction. Or if the chat is over the training, then start with the positive talk, will also be effective. Everyone has his own field of expertise, so let's meet with trainee flexibly considering the relationship with the trainee.

(2) Grasp the progress situation of training (as a trainer)

The trainer **must** grasp the progress situation of training. By the observation of the trainee's action during off the training or through supervising and observation of OJT, you already have a certain amount of information about the progress situation of training. By having a time with trainee at out of the control room, you might get more accurate information of progress situation, or you might be able to extract the problems which had not yet surfaced.

Moreover, these grasps of training situation contribute to safety in OJT. Now with this

information you can intervene at suitable timing.

A. Understand "Phases" and the "Assessment Sheet" prescribed at the office.

The trainer **must** understand training "Phases" and the "Assessment Sheet" which are prescribed at each office based on "Ideal Education and Training of the Air Traffic Controllers."

B. You should understand that progress is measured against goal.

Grasping the progress is roughly classified into two parts. Those are short-term viewpoint, and a long-term viewpoint. To judge whether the training attained the "goal for the round." is a short-term viewpoint. On the other hand, long-term view point is measured against "middle/long term goal, like "whether the trainee's progress is slow or fast" or "whether the training is making little/big improvement lately".

Grasping the progress of the training should measure against the goals which both trainer and a trainee set up. About matters other than the goal, it **must** be done supplementary

C. Ask a trainee's impressions.

First of all, let a trainee speak about the impressions of one round of the training.

By outputting, one can input effectively. If you would like to perform tutorship and advice effectively, let's start with asking a trainee's impressions.

D. Talk about positively evaluated points.

Next, the trainer **must** talk about the positively evaluated points during one round. You **should** also tell the positive evaluations by other Instructors.

Even when a trainee expressed rather bad impressions, you should begin with the positive aspect of the training. And let's deepen the talk gradually by developing questions about other aspects of the training.

Good parts must be recognized as "Good" otherwise the trainee might take wrong selection. Moreover, let the trainee re-recognize that he is under supervising.

You **must** accept "good part" in order to give confidence to the trainee. When talking about the good points, let's make it specifically.

△ "It was good."

○ "It seems to me, at first you haven't noticed upper wind effect. But from the middle of training, you noticed disorder in the traffic flow from the deviation of flight tracks. You took corrective action. That was good.

E. Talk about a shortage point.

Next, the trainer **must** point out the shortage points. It is also required to inform trainee that not only Instructor's own opinion but also other Instructor's opinions at training meeting and other occasions as much as possible. With the cooperation of whole members, to make the training advance, it is very important to tell the evaluations of the Instructor to a trainee.

1) Remember the "each round Goal".

When trainer talks about the shortage points of training, he **should** be conscious of whether the shortage points were within the limits of the goal shared in advance, or not included in the goal. Trainee tends to give priority over the goal set up in advance. You **should** talk about the "shortage point" after understanding that the shortage itself might be the result of the goal achievement.

*About goals: What was accomplished or what was not yet accomplished.

* Other than goals: Did any change take place in matters other than goals?

(2) Keep in mind a bidirectional discussion.

Not only inform unidirectionally from trainer to trainee but also ask the trainee what he himself was thinking or what he thinks about the cause of problem. You **should** confirm the trainee whether he understands the contents.

* When you ***** to OZ201****, why did you do that?

* Why did you overlook KC135"?

* Then, how do you act when you are in a same kind of situation again?

(3) Grasp the condition of a trainee. (as a trainer)

When the trainee's manner seemed unsatisfactory, probably, it is good to explore the state of trainee's mind from a viewpoint of "motivation", "ability", and "trigger",

* Does the trainee feel fulfillment and necessity himself?

* Does the trainee think that a task is difficult/easy?

* Does the trainee need some "push"?

There certainly are difficult cases, since we are dealing with human mind. However, let's do what you can do before blaming the trainee, saying "His motivation is low." or "He does not act".

(4) Goal Set Up (as a trainer)

A. To understand the meaning of goal setting.

Needless to say, trainer and trainee share final goal of "to be qualified as an air traffic controller". In some cases, for a trainee this goal seems to lie very far away. For example, everyone feels uneasy when thrown up in a dark tunnel where one cannot see the exit. The uneasiness will be mitigated if there is a flashlight which illuminates ahead or the chart which shows whole tunnel.

In training, goal setting is equivalent to a flashlight or a whole chart. By subdividing the distance, a trainer and a trainee can grasp "the reason why you have to tackle this goal now" or "what kind of step awaits after clearing this step". The trainer **must** understand the meaning of above mentioned "Setting up Goals".

B. Set up middle-term, long-term goal and the goal for every round.

With a trainee, trainer **must** set up middle-term, long-term goal and the goal for every round. "With trainee" means trainer and a trainee will set up goals through discussion. Or it means, first trainer will set up a goal then sharing the goal with trainee and getting consent from trainee.

Trainer and trainee **must** set up goals one, two, three months ahead. By rendering rough milestone visible, you can make it as a custom to establish a priority sequence for each milestone task. It is the "whole chart" in a dark tunnel.

For each milestone task with priority sequence, you **must** set up specific goal for the day. With this the trainee can make it a habit to find out importance to day by day, unit by unit training. It is the "flashlight" in a dark tunnel.

C. Trainer should understand the goal will influence a trainee's motivation.

1) Goals which boost spontaneous motivation.

Goal setting has big influence on a trainee's motivation as stated at "A. Understanding the meaning of goal setting." It is because a trainee's motivation can be boosted by setting up the goal level according to the progress of the training, or the trainee's condition. It will be effective to boost the trainee's spontaneous motivation by setting up goals which have "adequate difference" from the trainee's interests (skill level).

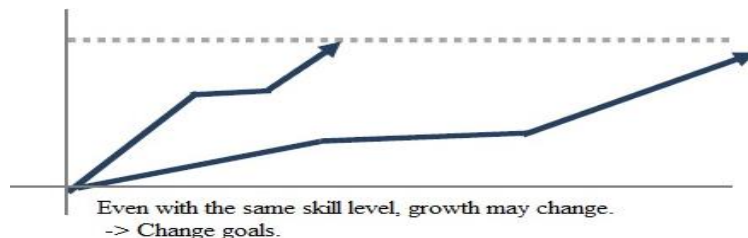
You should understand the goal setting is a tool of controlling a motivation. For that purpose, it is required to grasp the progress of training and a trainee's condition exactly.

For example, let's think the case of mastering the juggling. Here let's suppose that the final goal is juggling ten balls easily. The direction of increasing one ball at a time could maintain motivation rather than giving "three more balls" to the person who tried hard and came to be

able to juggle three balls at last. From this viewpoint, you **should** limit the goals to the small portion (which is easy to handle) especially in an early stage. The trainee can grow little by little and he will be able to unify the fragment into integrated structure.

2) The goal relative to a growth rate

When a growth rate is good, the trainee can absorb somewhat higher goal and more subjects, but when a growth rate is slow even if it is inconsiderable goals, he might not be able to attain the goals and it may lead to the decline of motivation. When training is behind the schedule, we tend to set up a higher goal trying to catch up, but in many cases, it rather leads to an opposite direction. Even if it may have felt as a detour, we **should** understand that the goal with suitable skill level is good for effective and efficient training.



3) Support for promoting self-reliance.

You **should** gradually transfer the leadership of goal setting to a trainee as training approaches to the final stage. When an Instructor thinks "Trainee is almost ready for final trial", it is **necessary** to make the trainee set up a goal by himself and give consent to the goal. It is also an Instructor's role to give a freer hand so that a trainee can act spontaneously.

(5) Give trainee a questioning opportunity (as a trainer).

The leading role is played by a trainee and it is highly **recommended** for a trainee to tackle training actively. It is an unavoidable thing that the trainer makes much of the talk. So, it is **required** to give a questioning opportunity to a trainee with suitable frequency.

It will be an opportunity for a trainer to know trainee's questions about training or a trainee's own state.

3. Daily information sharing (as a trainer, as an Instructor)

(1) Information sharing between Trainer and Instructor

As stated in "Chapter2 1. Relation between Trainer and Instructor" cooperation between a trainer and Instructor is very important.

Matters that sole OJT training team can do is rather limited. Instructor's ability is **required** to make progress in the more suitable direction with bigger strength. The Instructor should be an adviser to an OJT training team, and also **should** be a promoter.

A. An Instructor's implementation items

Instructor **must** grasp the progress of training by communicating with other Instructors or checking the training assessment sheets. Moreover, at the meeting prescribed in "Air Traffic Controller's Education and Training." Instructor **must** inform his evaluation of the training and express his opinion to the OJT training team's "goals" and "guidelines" so that the training will develop toward better direction.

By performing information sharing appropriately, the Instructor can acquire the following effects.

- (1) Instructor can make suitable decision by considering the training progress.
- (2) Instructor can perform effective briefing in shorter time.
- (3) Instructor can make the goal remain within the contents agreed with a trainee.
- (4) As a result, Instructor can contribute to boost a trainee's motivation.
- (5) Instructor can perform suitable intervention according to the progress.

B. A trainer's implementation items

The trainer **must** collect the evaluations to the training from other Instructors at training meeting or at other places. And you **must** transmit the evaluations as an OJT training team and future goals and guidelines to other Instructors.

(2) Preparation for make it convincing

Trainer and Instructor should make convincing remarks, when telling evaluation or sharing information with trainee.

The convincing remarks will be done with clear reasoning. You have to make it clear, "why you are making such evaluation" or "why it is not appropriate to make such evaluation". When you are asked additional questions, it is **necessary** to make explanations which reinforce your own idea.

How about preparing a written text of your idea in advance? By writing, you can organize your own thought.

For that purpose, you have to deepen your understanding about training phases and about assessment sheet at your office. Furthermore, it is necessary to use assessment sheet as it is originally designed.

Summary of Follow-Up & Preparation

Ten points for Follow-Up & Preparation used as the foundation of training.

[Instructor & Trainer]

- * Deepen an understanding about the training phases of the office and an assessment sheet.
- * Utilize a written text so that you can express your opinion with convince.

[Trainer]

- * First, ask a trainee's impressions about training of the round.
- * Talk with a trainee about positively evaluated points during the round.
- * Talk with a trainee's shortage points during the round.
- * Set up effectively middle and long-term goals with a trainee.
- * Collect evaluations from other Instructors and inform other Instructors a future goal and guideline.

[Instructor]

- * Grasp the progress of training.
- * Inform evaluation to the OJT training team.
- * Make advises about the policy of an OJT training team and make it develop.

II Decision [just before OJT - during OJT]

"Decision" is a phase which compares the progress and the operational situation of ATC, then judges whether to start OJT or not, and selects OJT technique just before OJT.

1. Objective

The Instructor **must** make decision, in order to ensure a supervising, but this is not special phase but the on and off the training Instructor is doing it automatically. Once again, Let us consider what is it for?

A. In order to ensure supervising

Causes of the problems which occur during the OJT are analyzed as "not grasped the trainee's progress appropriately" or "to have neglected a step to collate trainee's progress and operational situation".

That is, when a Instructor has failed to notice that the traffic is exceeding or exceeded trainee's capacity. Or when Instructor realized the situation by he himself, he cannot fulfill a

supervising by his own capacity.

You **must** understand that the series of flows of "Grasp training progress->Decision" are phases indispensable in order to ensure "supervising."

B. In order to boost a spontaneous motivation

As stated also at "3. (2) Make trainee to take action." training under the environment which "**shifted moderately**" from the trainee's interest point will heighten spontaneous motivation. Under the environment where a trainee can issue permission or instruction by his own judgement he can experience the fact that preparation leads to a success. For trainee, it also will be the energy for the next OJT.

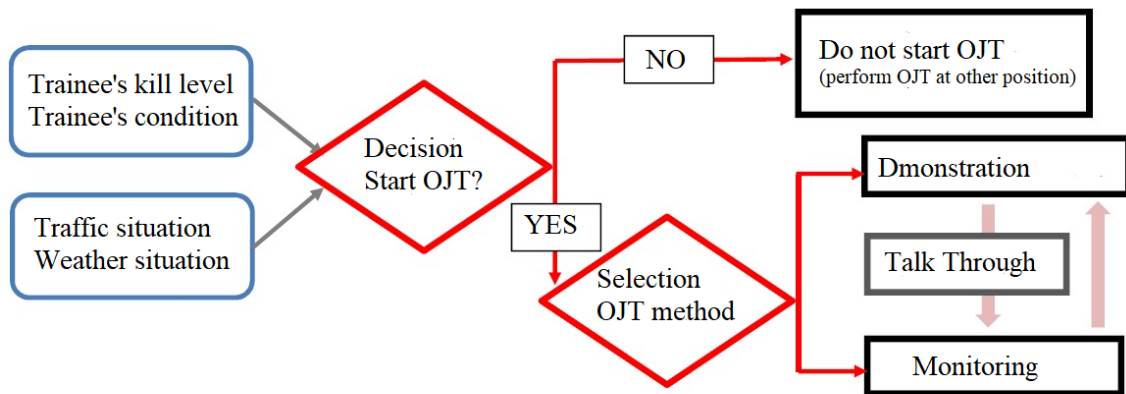
The training that impress the trainee, he cannot cope with the situation, when Instructor himself is well aware of the fact that operational traffic is well above the trainee's skill level will not give a good effect. Rather the failure experience may remain within a trainee as fear and uneasiness, and in a following training it may induce strangulation of consciousness.

This kind of situation (experience) **should** be given restrictively under the strictly managed environment. Skill and consciousness will improve effectively by making success experience step by step.

You **must** understand that selection of a training environment is also a tool of motivation control.

2. Decision of start OJT. Selection of OJT enforcement technique.

After comparing the progress and the operational situation, the Instructor has to judge start of the OJT and selection of the OJT technique.



In the first phase of early stage of training it will be effective to demonstrate (Supervisor explains situation while performing control).

Moreover, it is not enough to make this judgment only before start of the OJT. Even after starting OJT, you **must** observe and predict the traffic and the weather situation continuously. As a result, when it is predicted that the operational load will increase beyond trainee's skill level, you **must** take flexibly other measures, such as shifting to another OJT technique.

Summary of Decision

"Decision" which the Instructor is performing automatically is an important phase. There are three points in it.

- *After comparing the progress of training and the operational situation, judge the start of OJT and select OJT technique.
- *Instructor should recognize it as a phase required in order to carry out a supervising certainly.
- *Instructor should recognize that the OJT environment also affects a trainee's motivation.

III Briefing [just before start OJT]

Briefing is a phase in the "preparations" and is performed just before starting the OJT. OJT is mainly carried out at the control console in the operation room.

Since it is not always the case when an Instructor and a trainee can start taking the position simultaneously, but the Instructor may already controlling the traffic. So, it is **necessary** to stick to the point so that in a short time required items are all referred and should not be omitted.

*When taking over the charge of control, an Instructor has the responsibility to ensure the situation in which trainee confirmed all matters concerning "take over" including a traffic

situation, as provided in the "Regulation of Aeronautical Security Service 5 Regulation of Air Traffic Control Operation VII Operation Guide for Training" However, this handbook explains matters other than this responsibility.

Don't give a trainee the negative psychology pressure.

1. Objective

A. For an Instructor

Briefing is the final opportunity which establishes the common understanding with a trainee before start of OJT. Based on the information gained in advance from the Preparation about "progress", "goal" and "guideline ", Instructor directly confirm with a trainee about the information concerning OJT. With this, Instructor can choose the exact timing of intervention and technique during the OJT. Moreover, based on an operational situation on the day, Instructor set up the specific goal focused on the OJT. This is effective in order to make training constructive, and also it is required to make suitable De-Briefing. Furthermore, explaining the OJT technique and tolerance level selected by "decision" has a good effect also for the trainee.

B. For a trainee

Facing the OJT, trainee is given an opportunity to settle uneasiness (or small questions) which he bears in his mind. Moreover, you can make OJT more meaningful by recognizing the specifically designed goal. Furthermore, unnecessary fear of insecurity and frustration are avoided by recognizing the tolerance level of the OJT about to start.

2. Don't give a trainee the negative psychology pressure.

All the study begins from consciousness. People's consciousness domain (functional exertion degree of the senses) is not always constant rather it changes with a trainee's states of mind remarkably. It is known that negative psychology such as fear, a concern, and dislike, will strangle a consciousness domain remarkably. Only by not making a trainee fall into such a negative state of mind, a trainee's spontaneity is maintained and a possibility of boosting the effect of training improves greatly. Especially at the times just before OJT, psychological pressure to a trainee **should** be well taken care of. It is the scene to make the best use of the contents of the "understanding of trainee psychology" described in Chapter 1. A device is **called for** as much as possible so that the mental condition from which the maximum effect of a trainee's training is acquired may be maintained. Let's look back upon your own voice tone or expression.

3. Final check with trainee

(1) Reconfirmation of progress

Among following points, the Instructor **must** pick up necessary items and check them by oral questioning.

(1) Check focusing on a trainee's weak point.

*Please mention the impact and points in the case of using this runway."

* What kind of mistake you made last time?

By asking the point that seems trainee's weak point you might be able to prevent a mistake of the trainee during the OJT in advance. On the other hand, making a trainee learn through failure is also a technique, but this technique should be employed within an original objective of the OJT.

2) Check trainee's experience during the same operational situation.

* When did you control this type of approach last?

* Have you ever controlled during the strong wind like this?

3) Check on the changes of prediction of a future operational situation.

* How do you predict the traffic situation tens of minutes after now?

* What are the possible traffic situations which might occur, and you have to pay attention for?

4) Take one more step forward and check about today's condition or the latest state of mind of trainee.

* So far how do you think you are doing?

* Do you think you are stuck recently?

(2) Goal setting in the OJT concerned

An Instructor must set up a specific priority goal for the present OJT, by relating one-round and middle-term goal to the traffic and weather situation during the OJT.

If too many goals are set up, an Instructor cannot fully perform tutorship and advice, either. In order to carry out efficient training, you **should** limit the goals to about three at the most.

By this, Instructor can specify clearly "what is required and what is not required" for the OJT concerned. About the goal which is not required for the OJT concerned, even if trainee fails to comply, you **should not** make too severe intervention or briefing.

You **should** understand that when a trainee is making good progress, you may raise goal to little bit "high load goal", but when he is behind the training schedule it is necessary for the effective and efficient training to set up a goal which has comparatively lower hurdle.

Moreover, it is also effective to let a trainee set up own goal. By letting the trainee to set up his

own goal and giving a consent to it, you can help to establish independence and positive in trainee and this will promote shift of trainee's motivation (from external motivation to the spontaneous motivation).

(3) Explanation of transfer and tolerance level of the OJT technique

A. Tell OJT technique to the trainee

The Instructor **should** tell about OJT technique selected in "Decision". Moreover, if there is a prediction of changing technique because of the operational situation change after start of OJT, you **should** tell also about the prediction.

B. Explanation of tolerance level

When performing "Monitoring" as the OJT technique, "Intervention" certainly accompanies. Instructor should explain the following tolerance level according to the situation.

- 1) The timing for Cut-In
- 2) Interference other than Cut-In

During the OJT, by grasping the range of his own control, the trainee can face training without unnecessary fear, insecurity or frustration.

This leads to raising the degree of functional exertion of a trainee's senses.

(4) Give a questioning opportunity.

Although, the leading role is played by a trainee and it is highly **recommended** for a trainee to tackle training actively, but it is unavoidable that the trainer who plays leading role makes much of the talk.

Then, it is necessary to give a questioning opportunity to a trainee with suitable frequency.

Facing the OJT, trainee is given an opportunity to settle uneasiness (or small questions) which he bears in his mind.

Summary of Briefing

Five Briefing points (must briefed in a short time)

- * **Don't give a trainee negative psychology pressure.**
- * **Reconfirm progress focusing on a trainee's weak points.**
- * **Set up the goals (limiting the number) for the OJT concerned.**
- * **Tell OJT technique to a trainee.**
- * **Explain the timing of Cut-In, and the frequency of interferences to a trainee.**

Chapter 3-2 OJT

OJT is the core time zone of supervising and the aspect of "supervise" become most prominent during the OJT compared with "Preparation" or "Review". It is also a time zone when workloads become highest for Instructor he has to grasp a trainee's skill level while supervising.

In this high load situation, the Instructor always **must** recognize the priority sequence of the tasks to carry out.

1. Objective

The prime objective of "Monitoring" is to grasp a trainee's skill level anew. Compared with observation of trainee's action and progress information obtained through "Preparation" or "Briefing", Instructor can grasp by his own eyes and ears at what point trainee progressed or stagnated.

Then, for what purpose Instructor have to grasp a skill level? It is to make an effective advice and tutorship. Namely, it is attributable to the original objective of the training. (To make trainee master required subjects effectively.)

Instructor might tend to make hash remarks or speak with severe tone, since traffic load is high even for an Instructor. However, an Instructor is **expected** to act always remembering an original objective.

2. Load on Instructor

In OJT, the Instructor must simultaneously perform very many tasks.

What task concerns Instructor himself during the OJT?

You **must** understand various loads are simultaneously on an Instructor, it is a big work load.

3. Load on trainee

On the other hand, for the load concerning a trainee we have so far described in this hand book here and there. Please understand that all through these sections of "An understanding of trainee psychology", "Preparation", "Decision", "Briefing" and other, the proposition of "How to maximize trainee's consciousness domain" is the backbone of this handbook.

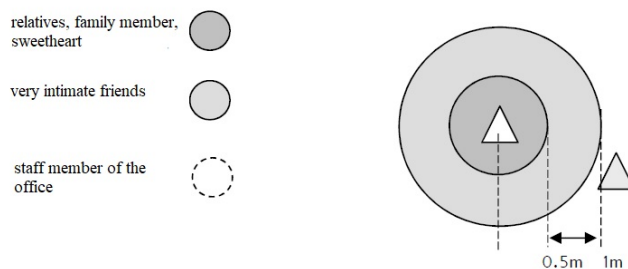
At here and there in subsequent sections, referring to the load concerning trainee, I describe what an Instructor should perform.

With suitable preparations on the side of Instructor, we can maximize a trainee's consciousness domain and can make training efficient along with the original objective.

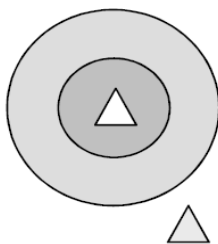
4. Basics for Monitoring

(1) An Instructor's positioning

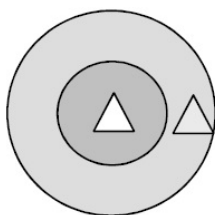
Considering the effects on trainee's psychology, Instructor **should** compare the merit and demerit of his supervising positions. The distance with which one feels uncomfortable can generally vary with one's social status.



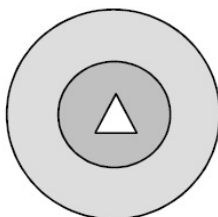
The Instructor **should** recognize that Instructor is "the staff member of the office". Even if Instructor thinks that he has personally has intimate relation with a trainee, but the trainee does not necessarily feel completely the same way. Moreover, in OJT, you **should** devise so that individual feeling may not intervene. You should recognize that changing the attitude according to Instructor's personal preferences may be a psychological burden even on the side of favored trainee.



When training approaches the final stage and you want to intentionally heighten training effect, positioning out of trainee's eye sight can make a trainee feel confident and a responsible. Even in this case, you also **must** observe a trainee's action certainly (strip marking and casual behavior).



When you sit just beside the trainee, you are very much in the trainee's eye sight than you might think. Every Instructor's movement will be caught in the trainee's view, and a several percentage of trainee's precious consciousness domains will be wasted. On the other hand, for a Instructor, sitting just beside the trainee has a merit of being easy to make intervention, a tutorship and advice.



Supervising in other seat where you cannot observe a trainee's behavior (strip marking and casual behavior) **must not** be carried out. Even if the training is nearing completion, you **should** recognize that fault incidents might occur.

(2) Record of OJT

What Instructor can do to make De-Briefing after OJT make more effective one?

The Instructor receives big load during the OJT as stated at "2. Load on an Instructor." Even in the usual state of mind, "memory" has ambiguous character, but in an overload situation, a shade is easily attached to the memory, and as a result one tends to misunderstand a precise memory is being build.

The good point having appeared in the first half is forgotten, the mistake of the second half and a weak point will become conspicuous, or details will be forgotten just as a situation becomes good.

How about utilizing characters and simple figures? (Rather than depends on only memory.) At "Chapter 3-1 Daily Information Sharing", we proposed that an Instructor should prepare "the text" before speaking to the OJT Training Team.

It will be good making some memo during the OJT in order to tell grasped skill level to the training team.

1) Make precise record on "what was able to do" and "what was not able to do".

For OJT goals, let's record "what was able to do" and "what was not able to do" along with their causes.

2) Put degree of importance down with the record.

In order to carry out effective OJT, it is very effective to add degree of importance to each tutorship subjects. Just record with simple sign like "O" is enough.

(3) Prohibited matters

"Neglect" is not observing the trainee's behavior. It is same as being indifferent to training. You **must not** do that.

As mentioned in "1. Basic ideas for supervising ATC training," being indifferent to the training is an attitude fall far short of ideal. Even if a trainee has some problems to be solved, as a Instructor, you **must** at least have some interest in training.

Although sometimes getting "interested in" demands strenuous efforts but just this serves as a foundation of fostering a trainee.

Moreover, you **should** recognize that from the safety point of view "neglect" is an act of high risk.

5. Ensure a supervising.

Supervising is "Reservation of efficiency which does not affect safety ". It **must** be given priority over all other matters through OJT.

Even facing OJT with various tasks, Instructor **must** always in mind that there is a line which

he cannot yield.

(1) The incident factors during the OJT

In OJT, in spite of performing control by 2 persons that is eyes and ears of two persons, still incident can happen. What kind of feature is there in OJT compared with the control done by sole controller?

The following can be mentioned as the cause of the incident during the OJT.

- 1) The Instructor did not grasp the progress of training.
- 2) OJT was carried out under the operational situation which did not match progress of the training.
- 3) The Instructor had neglected the surveillance and prediction after an OJT had started.
- 4) A trainee did not spoke out that he was (traffic was) nearing at his ability limit.
- 5) The Instructor overestimated or was indifferent to the trainee and had left him with free hand.
- (6) Instructor became absorbed in a tutorship and advice and he was not hearing the communication.

This handbook has so far described how to reduce the possibility of incidents by preparation before start of OJT.

Here we describe action guideline concerning 5) and 6) during the OJT, except for 1) which is caused by a trainee.

(2) An Instructor considers the acceptable limits of the safety for himself.

In order to ensure safety and to secure the efficiency which do not compromise the safety, the Instructor **must** always be being conscious of his own acceptable limits of safety.

You **must** judge by the progress of training, trainee's condition, weak point and experience, amount of traffic, complexity of traffic, weather situation, other operational situations, Instructor's own condition, etc. Probably, a supervising's "acceptable limits of safety" differs from the time when he is controlling by himself.

We should not look for the sole indicator common to all Instructors, but you **must** recognize that there are different acceptable limits among people.

(3) Supervise and predict a trainee's remaining power.

You **must not** leave a trainee's capacity management only to the trainee. Especially during early stage of OJT, you should think that you are doing training since a trainee cannot yet manage his own capacity limits.

The rated controller is performing "external events handling", and "reserve capacity check" with good balance.

Since a trainee has to use most capacities for "external event handling", he cannot fully perform "reserve capacity check". When self-control failed, it drives trainee further into a tight corner, then it becomes difficult for a trainee to cope with external event. (vicious circle)

The Instructor **must** understand this tendency and has to try hard to grasp a trainee's condition.

1) The technique to check remaining capacity for external events

- *How do you sequence arriving traffic? (Ask planning)

- * What worries you now? (Are there any lacking points?)

2) The technique of recovering the check capability of "self-reserved capacity".

When you are losing your capability of "external event check", it is most likely that you are also losing check capability of "self-reserved capacity". You can regain balance by resetting the cornered state.

- * Make him breathe deeply.

- * Make him exercise light stretch.

- * "Now concentrate on the traffic." (Suggests change)

Moreover, a trainee tends to waver in judgment or tend to be at a loss for words over trifles. When in such cases, even Instructor become uneasy. But before making an abrupt intervention, you **should** check a trainee's state of mind first. Only observing from the back, there is no telling that the trainee is just going to consider various means, or he just freeze.

Furthermore, the responsibility of trainee to speak out his own limits is being provided in the "Aeronautical Security Service Regulation, 5th Air Traffic Control Service Regulation, VII Training ". An Instructor **needs** to take an attitude in which he accepts the request from a trainee. Then, judge whether to continue further monitoring or not.

(4) Check and predict an Instructor's own reserved capacity.

Needless to say, the Instructor needs to check trainee's reserved capacity. But he also **must** check his own reserved capacity. As stated repeatedly, Instructor should always is in complete control of traffic situation from the standpoint of safety and when necessary make cut-in without hesitation and has to succeed control. Especially inexperienced Instructor needs to improve skills together with trainee so that an Instructor's own acceptable capacity level can be raised. A reserved capacity portion serves as a watchdog and you can monitor the amount of your loads. If a reserved capacity portion decreases, your check capacity for load factor also decreases. As a result, your load increases with accelerating tempo.

6. Grasping of trainee's skill level

The first objective of OJT is to grasp trainee's skill level. The Instructor **must** grasp among the goals set up by briefing what goals are attained and what goals are not yet attained. Moreover, let's grasp the skill levels about tasks other than the goals.

You can perform evaluation of training only after being able to grasp a skill level.

*Among goals, what were become able to do or still not able to do?

* Did anything change about matters other than goals?

.

7. Auxiliary Tutorship and Advice

During the OJT, you **should** consider that the tutorship and advice is done as far as you can. It is not necessary to teach all during the OJT.

(1) Compatibility with a supervising

Suppose during the OJT an Instructor addresses to a trainee too eagerly. Can the trainee catch all certainly?

Not only trainee but the Instructor also might fail to catch the call-up.

During the OJT, give priority to a supervising over a tutorship and advice. Instructor should re-recognize this. You should hold back a kind of tutorship which calls on a trainee to reflect on his control.

(2) Add stress according to the degree of importance.

For the trainee under OJT his memory storage capacity tends to become small.

If Instructor talks all advice and tutorship without making any stress variation, trainee in such a state of mind will just hear them without realizing the priority among them.

Although on the side of listener, information sort out will naturally occur, but if speaker add some stress according to the importance of the subjects, he can make more exact and more efficient transfer of information. The Instructor should talk clarifying the difference according to the subjects (strong/moderate instruction or just an advice).

*Be sure to ?? . Be sure not to ?? (strong instruction=duty)

*Do ?? . Because it is more effective (moderate instruction)

* This is just an advice. Why don't you ??? (advice).

Summary of Monitoring

Six essential points for both trainee and Instructor who are under heavy load situation.

* When grasping skill level, don't depend on memory only, but utilize record with characters or figures.

- * Don't neglect nor indifferent to the trainee by any means.
- * An Instructor considers his own capacity limits for safety.
- * Check reserved-capacity for both a trainee and an Instructor.
- * Tutorship and the advice are not necessary done during the OJT. Instructor should recognize that priority is in "Supervising".
- * When making tutorship and advice, add stress according to the degree of importance

IV- II OJT (Demonstration-Talk Through)

1. Objective

The objective of Demonstration and Talk Through is to make subsequent shifts to the Monitoring smoothly by checking trainee's prediction and planning level. As shown in the following table, in Demonstration, Instructor explains his intention of directions. Moreover, Instructor should make a trainee to participate by occasional question etc. Talk Through is the technique of delegating a part of control to a trainee while Instructor keeping final responsibility. "Talk Through" has an effect by which Instructor can confirm the trainee's level of future training plan. Although these techniques are effective at the early stage of OJT or effective at the time of recovery from intervention, these are not always need to be performed.

Demonstration	Talk Through
Instructor judges.	Trainee judges.
Instructor communicates	Instructor communicates.
*Carry out explaining reason why. *Ask questions and make a trainee participate.	*Accept minor deviation in directions. *Carry out explaining reason why.
*Early stage of training *Under rare situation *When the trainee is facing with elementary problems	*When returning to Monitoring, after Cut-In and following control by Instructor. *When shifting Demonstration to Monitoring

2. Points to be noted

Following points also be noted.

- Since it is OJT with explanation, carry out under light traffic.

Even if you are in the middle of explanation, if necessary interrupt considering the situation.

- In Talk Through, Since the objective of "Talk Through" is to delegate control to a trainee eventually, an Instructor needs to accept even if the trainee's instructions is somewhat off the mark.

IV-III OJT (Intervention)

1. Objective

Intervention is an act of securing safety or act of securing efficiency within a warranty of good safety. In addition, there is also "Intervention" aiming at a tutorship and advice.

"Intervention" has characteristics of shifts in body of control. From the intervention till near end of intervention, responsibility of control shifts from trainee to Instructor. Here, let's master safe way of "Intervention" with this characteristic in mind.

2. Types of Interventions

(1) Cut-In

Take up control completely from a trainee.

(2) Other than Cut-In

Interfering trainee's action by instructing actions for trainee is also a kind of intervention. In this case, leaving control to the trainee the Instructor take control for a single shot. For example, let a trainee check pilot's read back, or let a trainee make specific instruction etc.

3. Acceptable limits for Instructor himself

There is no set standard for timing, so it is **required** for Instructor to judge optimal timing for "Intervention", "Cut-In" etc. For this purpose, you have to prepare your own judgement criteria. In order to ensure safety, and in order to secure the efficiency within a warranty of good safety the Instructor **must** always being conscious of his own acceptable limits.

4. "Cut-In" Technique

Even if the Instructor well understands the importance of Cut-In, he may miss the timing for action. At first, everybody feels "Cut-In" is difficult. Even skilled Instructors feel uncertain from time to time. Inexperienced Instructor who do not has his own standard tends to waver. Whenever you hesitate in your mind between "Cut-In" and "not Cut-In", you **should** "Cut-In".

First, as a clue, let's classify "Cut-In" into some cases and deepen our understanding.

(1) Cut-In due to threatening situation like Red CNF, CA, etc.

Also in order not to cross final line which must be protected by all means, when "Red CNF" or "CA" occurs, you **must** Cut-In immediately. In such a threatening situation, it is extremely risky to miss the timing. On the other hand, there is almost no merit you can get by just waiting. It is obvious you have to "Cut-In" immediately.

In the threatening situations, like Red CNF and CA, "Cut-In" immediately.

(2) Cut-In due to communicational discrepancy

In the case of Communicational Discrepancy like "Trainee did not notice his own misstatement" or "Trainee fail to notice incorrect read back from pilot", how about devising so that *performing "Cut-In"* may get across to a pilot.

* "Negative" --

* "Revised" --

* "Correction" --

A pilot has no way to know that the ATC training is underway. (except for GCA) It is quite natural for him to like to confirm when he gets an instruction which differs from the instruction received immediately a second before. You must be careful, when the controller's sex changes by "Cut-In". (male/female trainee to female/male Instructor)

(3) Cut-In which lowers a trainee's load

You **should** utilize Cut-In, not only for correction but also for recovering preserved-capacity. When a Instructor judges that a trainee's preserved-capacity is approaching his limit, or trainee himself expressed his own limit, Instructor **need** to take control for a while.

As a somewhat more advanced technique, while trainee's reserved-capacity is still left, make Cut-In only when really necessary, thus you can lower a trainee's load, temporarily. Please utilize this as one-point technique.

(4) Cut-In for protecting an Instructor's reserved-capacity

The Instructor is facing many tasks during the OJT.

When you felt, if you continue monitoring as it is, you yourself might lapse into state of own limits, you should not mind the trainee nor controllers around you. You **must** arrange your set up ready, so that you can concentrate on the traffic.

You don't have to be a "HERO".

Probably, it is better to tell a trainee the fact saying, "I have to Cut-In since my reserved-capacity is now being lost".

5. Trap during the OJT

During the OJT, problems may occur because of the causes which cannot happen when you are controlling by yourself. It seems to be triggered by misrecognition since the traffic is handled by two persons or excessive meddling by an Instructor or trainee's waver for action.

Here are some incident examples during the OJT. Do not put away these cases as somebody else's affairs. Please utilize them on the assumption that you also may cause this kind of mistakes.

Forget oneself in teaching...

- The Instructor who has noticed the misdirection in the trainee's instruction said "No!".
- The trainee responded immediately, instructing "Disregard" to pilot.
- Immediately after the trainee said "Disregard", Instructor began oral tutorship to the trainee on the spot.
- But the trainee's intention of cancellation by "Disregard." did not get across to the pilot.
- Both Instructor and a trainee did not notice that the pilot's read back was incorrect.
- And with the misdirection by the trainee, the pilot ends up in "near miss" with other aircraft.

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

Distracted by a trainee's way of -- -

- The trainee instructed a descent to 3000 ft. to the aircraft establishing initial communication.
- Before Aircraft A, the trainee was instructed aircraft B to climb to 3000 ft., but he had forgotten this.
- Although the Instructor recognized existence of aircraft B, he was distracted by the trainee's way of arranging strips (It was different from Instructor's arrangements.) and failed to recognize climbing aircraft B.
- Both aircraft gradually approached each other unnoticed from neither trainee nor Instructor.
- Although an evasive direction was issued but the pilot fails to acknowledge this in a single transmission. Both aircraft executed evasive maneuver following the TCAS warning.

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

This incident happened at the early stage of training--

- For the trainee the position was his first training seat and it was only one month since the training started.
- The Instructor did not have full grasp of neither a trainee's training record nor his skill level.

-Aircraft A was climbing to FL260. Aircraft B was at FL350. Routes for air craft A and B crosses each other. The trainee judged from the climb rate of air craft A that A can climb through the FL350 with ample separation.

-The trainee issued continue climb clearance to aircraft A. -Aircraft A's climb rate was decreased as she climbed. As the result aircraft A and B were felt into a near-miss situation.

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

They felted kind of relief since training was at final stage, but the relief backfired on them.

--

-A trainee was at the final stage of training and was expecting the recommendation meeting at the end of the month.

-The Instructor also recognized the skill level of training correctly.

-The trainee was at busy local seat. He issued landing clearance to arrival aircraft.

-Then departure aircraft called up. The trainee instructed to the aircraft to hold short of runway.

-The Instructor had trusted the trainee completely and was not monitoring communication intently.

-The departure pilot replied "????", but he crossed the stop line and taxied into the runway.

-Both a trainee and an Instructor did not notice this. As a result, arrival aircraft executed go around by his own accord.

Threat	
Analyze threat (What are causes for threat)	
Counter Measures	

6. "Intervention" without necessity

An Instructor has an inclination to give many tutorships and advices to a trainee. However, it is important to look back upon whether they were truly required during the OJT or were there any other means. When correcting a trainee's mistake, you also **should** judge whether "it should be corrected immediately," or "you can correct it later." For that purpose, the Instructor himself **needs** to recognize "What are the important matters and what are the auxiliary matters."

Overabundant intervention may check trainee's mind shift to the spontaneous motivation.

7. Resume Monitoring after Cut-In

When resume Monitoring after Cut-In, the body of control returns to a trainee from a Instructor. You **should** recognize that some risk will accompany at the time of control shift.

An Instructor **should** return to "Monitoring", after discerning well whether the trainee understands the traffic situation. If it seems that the trainee has not yet caught up, Instructor should explain about his directions issued and the matters concerned immediately after shift.

How about utilize "Talk Through"? It will help control shift smoothly. At this section, regarding the state of continuous "Cut-In" as a kind of "Demonstration", here I introduce the technique of returning from Demonstration to Monitoring via Talk Through.

Demonstration	Talk Through
Instructor judges.	Trainee judges.
Instructor communicates	Instructor communicates.
*Carry out explaining reason why.	*Accept minor deviation in directions.
*Ask questions and make a trainee participate.	*Carry out explaining reason why.
*Early stage of training	*When returning to Monitoring, after Cut-In and following control by Instructor.
*Under rare situation	*When shifting Demonstration to Monitoring
*When the trainee is facing with elementary problems	

"Talk Through" has an effect by which Instructor can confirm how well the trainees can visualize his own future training plan. Furthermore, a trainee can materialize his own idea quickly by participating in judgment.

By performing Talk Through, the trainee will participate in judgment and that help him returns to the before "Intervention" state easily. Since returning "the control" to the trainee is the final objective, a Instructor needs to accept even if trainee makes somewhat off the mark instructions.

Summary of Intervention

Five points for giving priority to secure safety

- *What is my standard for "Cut-In"?
- *For threatening situation like Red CNF, CA, etc. Cut in immediately.
- *Recognize the incidents which likely happen during the OJT.
- *Recognize that too much intervention may have harmful effects on progress of training.
- *When resume Monitoring after Cut-In, it should be done after making a trainee well understand traffic situation.

Chapter 3-3 Review

Review is very important occasion, which directly influence the effect of OJT.

Since supervising is the Trinity of "Preparation + OJT + Review", for a Instructor it is quite insufficient just finishing the OJT. Instructor **must** carry out to the Review.

V Debriefing [everyone training unit]

Let's divide "Review" into "what is performed as an Instructor", and "what is performed as trainer", and consider them. Among these, what is performed as an Instructor is called "De-Briefing".

The Instructor **must** perform De-Briefing for everyone training unit of OJT, before memory of OJT fades out.

1. Objective

The objective is to enlarge the effect of the OJT by notifying to a trainee about the evaluation to the goal of the OJT concerned. This is the act of amplifying the future effects, Instructor **must** always De-Brief with forward looking attitude.

Although main direction of information transfer is from Instructor to a trainee but let's try to communicate bidirectionally.

By performing debriefing certainly, an Instructor can make well-grounded persuasive remarks when informing other Instructor or trainer of “evaluation”, “advice” and “tutorship” about the trainee.

2. Transfer of evaluation, and effective Tutorship and Advice

The Instructor **must** inform a trainee evaluation of OJT. Moreover, you should inform a trainee Tutorship and Advice at not during the OJT but at the Debriefing.

(1) Ask a trainee his impressions.

First of all, Instructor let a trainee speak about the impressions of the OJT. By outputting, one can input effectively. If you would like to perform Tutorship and Advice effectively, let's start with asking trainee's impressions.

(2) Talk about positively evaluable points.

Next, the Instructor **must** talk about the positively evaluable points during the OJT. Good parts have to recognize as "Good" otherwise the trainee might take wrong selection next time. You have to accept "good part" to give confidence to the trainee. Moreover, let the trainee re-recognize that he is under supervising. When talking about the good points, let's make it specifically.

* △ "It was good."

* ○ "It seems to me, at first you haven't noticed effect of upper wind. But from the middle of training, you noticed disorder in the traffic flow from the deviation of flight tracks. You made correction. It was a good point.

Even about matters other than the goals, look for the positively evaluable points and inform trainee the points. Even if they are minor points it is good thing to do. This makes trainee easy to accept remarks about his shortage point and a future task.

(3) Speak about shortage points and new subjects.

Next, the Instructor **must** tell about a shortage point.

A. Remember the matter which was a goal of the OJT concerned.

When Instructor talks about the shortage points of training, he **should** conscious of whether the shortage points were within the limits of the goal shared in advance, or not included in the goal. A trainee tends to give priority over the goal set up in advance. You **should** talk about the "shortage point" after understanding that the shortage itself might be the result of the achievement of goals.

*About goals: What was accomplished or what was not yet accomplished.

*Other than goals: Did any change have occurred?

B. Talk mainly about future tasks.

Not only inform unidirectional from trainer to trainee but also ask the trainee what he himself was thinking or what he thinks about the cause of problem. In this way you can talk with a trainee.

* When you ***** to OZ123*****, why did you do that?

* Why did you overlook KC345"?

This is talking about past event with the intention of maximizing the future training effectiveness. "What can you do for future tasks?" This is the question mainly focusing on future tasks. An Instructor is **expected** to act remembering original goals always.

C. Add stress according to the degree of importance

The trainee who just finished OJT has exerted his thinking capacity very much, and there is a possibility that his memory became smaller than usual. If Instructor talks all advices and tutorships without making any stress variation, trainee in such a state of mind will just hear them without realizing the priority among them. Not informing all subjects with same level of importance but, Instructor should add some stress according to the importance of the subjects. You should clearly specify which one has a greater importance a "Tutorship" or an "Advice".

* Be sure to??? Be sure (absolutely) no to ??? (A strong tutorship = duty)

* Do???? Because it is more effective. (Tutorship)

* This is just an advice. Why don't you ????? (Advice)

Too much stress **should not** be put on a simple mistake, like "the reply to the request from an air plane was slow", which just results from trainee's inexperience.

Summary of Debriefing

Five points for enlarging the effect of OJT

- * First a Instructor should starts with asking a trainee about impressions of the OJT.
- * Tell positively evaluable points in the OJT.
- * With goals of the OJT in mind, tell shortage points.
- * In order to make future training more effective, keep a bidirectional dialog in mind.
- * Carry out "Tutorship" and "Advice" according to the degree of importance.

VI Follow-Up & Preparation [off OJT]

Follow-Up is a phase in the "Review" and is carried out by a trainer.

Based on training of one round, it **needs** to be carried out at the comfortable place with ample time.

Like Debriefing, the trainer should not stop at reflecting on the past but should focus on the subjects which they can do now for the future. Therefore, let's combine with "Preparation" and think as a "Follow-Up & Preparation."

For details, reconfirm the contents of "Chapter 3-1 Preparation". All is described there.

Appendix 1. Program for training ATC controller
PROGRAM FOR TRAINING ATC CONTROLLER

(Full Name)

(control room)

THEORETICAL PREPARATION

According to plan **102** _____ **hours**

Actual _____ **hours**

STAGES OF PREPARATION	TIME		DATE
	Plan	Actual	
1. Study of the organizational structure of the air navigation system of the Republic of Tajikistan.	8		
2. Acquaintance with the general technological process of the ATC at the control center (Tower, ACC, Approach, Precision, Secondary Tower).	14		
3. Acquaintance with the reference materials at the working places.	6		
4. Study of the order and features of interaction with adjacent control centers (ATC sectors)	4		
5. Study of the order of interaction with adjacent control centers (ATC sectors), air force and air defense forces.	4		
6. Acquaintance with meteorological information at work places.	4		
7. Acquaintance with the means of the REM and ATC at the working place.	14		
8. Study of the job description and technology of the controller's work.	24		
9. Study of the rules of radio communication and the phraseology of radio communication.	14		
10. Study of the main provisions of international regulatory documents on air navigation.	10		

REM: RADIO ENGINEERING MEANS

CHECKING THE ASSESSMENT OF THEORETICAL TRAINING	EVALUATION	SIGNATURE
requirements and provisions of regulatory documents and ATC features in controlled airspace;		
Equipment and communication means of ATC;		
knowledge and ability to schematically represent the elements of the airspace structure of the RT, the location of the means of the engineering services;		
characteristic landmarks and artificial obstacles in the area of responsibility, safe heights in controlled airspace;		
use of reference materials necessary for work at the control center;		
order and peculiarities of interaction with adjacent control centers, air force and other services;		
features of providing and VIP flights.		

Overall assessment for preliminary training

Conclusion of the instructor

Instructor

(position)

(signature)

(surname)

«__» _____ 20

PREPARATION FOR WORK AT ARAS ATC (AWP)

According to plan 14 hours

Actual hours

TEMA	TIME		DATE
	Plan	Actual	
1. Fundamentals of the theory of automation of ATS processes.	2		
2. Purpose of the composition and tasks solved by automated ATS systems.			
3. Sources of radar, navigation and meteorological information, system architecture.	2		
4. Processing of radar information.			
5. Redundancy of radar information.	4		
6. Voice communication system. Structures of the organization of communication in the area of responsibility.			
7. Initial information stored in the system.	2		
8. Receipt, processing and passing of the planned information in the system.			
9. Equipment of dispatching consoles and workplaces.	2		
10.Information displayed on the IVO. Types and composition of support forms.			
11.Functional capabilities of the system.			
12.Types and composition of lists displayed on the IVO.			
13.Procedure for using ATC or AWS.	2		

Conclusion of the instructor

Instructor

(position)

(signature)

(surname)

« » 20

PRACTICAL TRAINING

According to plan 160 hours Actual hours

FROM THEM AT THE INTER-CONTROLLED CONTROL POSITIONS

According to plan 70 hours Actual hours

STAGES OF PREPARATION	TIME		DATE
	Plan	Actual	
1. Instructural demonstration of the duties of the controller with subsequent analysis of typical examples of the air situation and the reasons for this or that decision of the controller.	8		
2. ATC control of the air situation with the help of the REM.	4		
3. The procedure for receiving and transmitting the calculated data on the movement of aircraft.	4		
4. Information of the current air situation.	4		
5. Issuance of ATC clearance and instructions.	6		
6. Acquaintance with the work of controllers of adjacent sector.	70		
7. ATC role-playing.	6		
8. Acquaintance with the characteristic errors of controllers in ATC.	6		
9. The order of distribution of attention of controllers at the Department of Internal Affairs.	4		
10. ATC under the supervision of an instructor as an intern from the controller's workplace with simultaneous development of skills in the use of phraseology, interaction issues and controller responsibilities with the ATC according to the technology of work.	20		
Evaluation of work.	4		
11. Acquaintance with the rules and procedures for maintaining the established documentation.	14		
12. Improvement of practical skills under the supervision of an instructor.	18		
13. Training in the simulator room.			

REM: RADIO ENGINEERING MEANS

CHECKING PRACTICAL SKILLS OF WORK	EVALUATION	SIGNATURE
Control over the movement of aircraft with the use of ground facilities of the PTO, the introduction of altered flight parameters.		
Definition of medium-term conflicts, use of available funds.		
Timely analysis of the air situation and prompt submission of commands to the ATC in accordance with the technology of work;		
Radio communication, practical application of RVSM standards for ATC.		
Interaction with adjacent dispatch centers, air force and air defense forces, other services;		
Analysis of the meteorological situation;		
Maintenance of the established documentation.		

GENERAL ESTIMATION FOR PRACTICAL PREPARATION _____

CONCLUSION OF THE INSTRUCTOR: _____

INSTRUCTOR _____

(position) (signature) (surname)
 « _____ » Г.

Appendix 2.

OJTI Pocket Checklist

Decision

- ☐ After comparing the progress of training and the operational situation, judge whether to start OJT and select OJT technique.
- ☐ Instructor should recognize it as a phase required to carry out a supervising certainly.
- ☐ Instructor should recognize that the OJT environment also affects a trainee's motivation.

Briefing

- ☐ Don't give a trainee negative psychology pressure.
- ☐ Reconfirm progress focusing on trainee's shortage points.
- ☐ Set up priority goals for the OJT specifically.
- ☐ Inform a trainee OJT technique. (Monitoring, Talk Through, Demonstration)
- ☐ To the trainee, explain Cut-In timing, and the frequency of other interferences.

Decision

- ☐ After comparing the progress of training and the operational situation, judge whether to start OJT and select OJT technique.
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- ☐ To the trainee, explain Cut-In timing, and the frequency of other interferences.

Контрольный список обязательных знаний и навыков для контроля стажировки

ОУТ-I: _____

Поток в раунде	Необходимые знания и навыки для контроля стажировки	Да	Нет
Понимание психологии стажера	Признать тот факт, что стажер и руководитель являются участниками проекта с одинаковыми целями.		
	Убедиться во взволнованности стажера, помня тот факт, что вы сами когда-то были стажером.		
	Признать, что общение требуется не только для обучаемого, но и для плавного контроля.		
	Довести до сознания стажера смысл и значение поставленной задачи.		
	Изучите, что является «достоверной разницей» для стажера.		
	Сделать так, чтобы задача казалось легкой для стажера.		
	Оказывать стажеру поддержку.		

Поток в раунде	Необходимые знания и навыки для контроля стажировки	Да	Нет
Подготовка и последующие действия	[Старший диспетчер и Инструктор]		
	Углубить понимание фаз обучения офиса и листа оценки.		
	Используйте письменный текст, чтобы вы могли выразить свое мнение с убеждением.		
	[Инструктор]		
	Во-первых, спросите у стажера впечатления о стажировке раунда		
	Соберите оценки других руководителей и сообщите другим руководителям о будущей цели и общем курсе.		
	[Инструктор и Стажер]		
	Обсуждать положительно оцениваемые моменты в раунде.		
	Обсуждать недостатки в раунде.		
	Определять эффективную среднюю и долгосрочную		

	цель.		
	[Старший диспетчер]		
	Быть в курсе продвижения стажировки посредством получения информации о стажировке, общения с другим руководителем, оценочных листов.		
	Информировать инструкторскую группу об оценке стажировки.		
	Вносить рекомендации в политику инструкторской группы и развивать ее.		

Поток в блоке	Необходимые знания и навыки для контроля стажировки	Да	Нет
Решение	Сравнив ход обучения и операционную ситуацию, оценить начало и выбрать метод стажировки.		
	Руководитель должен признать это в качестве этапа, необходимого для осуществления надзора.		
	Руководитель должен признать, что среда стажировки также влияет на мотивацию стажирuемого.		

Поток в блоке	Необходимые знания и навыки для контроля стажировки	Да	Нет
Брифинг	Не оказывать на стажера негативное психологическое давление.		
	Устно подтверждать необходимые вопросы по следующим предметам, слабым сторонам стажирuемого, переживанию одной и той же ситуации, предсказанию ситуации или физическому и психологическому состоянию на текущий день.		
	Определять приоритетные цели именно для стажировки.		
	Информировать стажера о методе стажировки. (Мониторинг, Обсуждение, Демонстрация)		
	Объяснить стажеру выбор времени вклинивания и частоту других помех.		

В течение	Необходимые знания и навыки для контроля	Да	Нет
-----------	--	----	-----

стажировки	стажировки		
Мониторинг	Понимать, что есть различные нагрузки на руководителя во время стажировки.		
	Понимать влияние относительного позиционирования руководителя по отношению к стажеру.		
	Для фиксации уровня навыков не полагаться на память, а записывать с использованием символов или цифр.		
	Проявлять заинтересованность в стажировке. Не пренебрегать и не быть равнодушным к действиям стажера.		
	Руководитель должен учитывать пределы своих возможностей для безопасности.		
	Проверять способности стажера и руководителя.		
	Наставничество и советы не обязательно осуществлять во время стажировки. Руководитель должен понимать, что приоритет находится в «Руководстве».		
	При осуществлении наставлений и советов подчеркивать в зависимости от степени важности.		

В течение стажировки	Необходимые знания и навыки для контроля стажировки	Да	Нет
Вмешательство	Обдумывать личные стандарты для «Вклинивания».		
	Для опасной ситуации, такой как Red CNF, CA и т. д. вклиниваться немедленно.		
	Осознавать инциденты, которые могут произойти во время стажировки.		
	Понимать, что слишком много вмешательств может иметь пагубные последствия для прогресса стажировки.		
	* Возобновление мониторинга после вклинивания, должно выполняться после того, как стажер хорошо поймет ситуацию с движением.		

Поток в блоке	Необходимые знания и навыки для контроля стажировки	Да	Нет
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Дебрифинг	Сначала руководитель должен начать с опроса стажера о его впечатлениях о стажировке.		
	Рассказать положительно оцениваемые моменты в стажировке.		
	С целями стажировки в виду, расскажите о недостатках.		
	* Чтобы повысить эффективность обучения в будущем, держите двунаправленный диалог.		
	Осуществлять «Наставничество» и «Советы» по степени важности.		

Поток в раунде	Необходимые знания и навыки для контроля стажировки	Да	Нет
Подготовка и последующие действия	(вышеупомянутое)		

Примечания

Наблюдается

Хайдео Ватанаби

Attachment-4-1
ACC training program

Theoretical training (ACC program)	Material
1. Study of the organizational structure of the air navigation system of the Republic of Tajikistan.	Structure of TAN
	United system of organization of air movement of RT
2. Acquaintance with the general technological process of the ATC at the control center.	Operation Manual of ACC (O/M)
	Job description of "ACC" controller
	Manual of use RVSM
	Agreement with ATC rooms of neighboring countries concerning ATS procedures and coordination
3. Acquaintance with the reference materials of the control center.	GAR-30
	GAR-21
	Aviation flight rules of RT
	Rules of use of air space of RT
	Air Code of RT
	Aviation rules concerning organization of air movement of RT
4. Study of the order and features of interaction with adjacent control centers (ATC sectors)	O/M
	LOA another ACC
	Coordination with air force and air defense forces.
5. Study of the order of	O/M

interaction with adjacent control centers (ATC sectors), air force and air defense forces.	Coordination with air force and air defense forces.
6. Acquaintance with meteorological support of the control center.	Manual of use AVIMET system and all meteorological equipment.
7. Acquaintance with the means of the radio navigation and communication system and ATC at the control center.	Manual of use "Master" system
	Manual of use "Frequentis" system
	Manual of use "MLAT" system
8. Study of the job description and technology of the controller's work.	O/M
	Job description manual
9. Study of the rules of radio communication and the phraseology of radio communication.	GAR-30
	ICAO doc 9432
10. Study of the main provisions of international regulatory documents on air navigation.	ICAO PANS-ATM doc 4444

Attachment-4-2
Approach training program

Theoretical training (Approach)	Material
1. Study of the organizational structure of the air navigation system of the Republic of Tajikistan.	Structure of TAN
	United system of organization of air movement of RT
2. Acquaintance with the general technological process of the ATC at the control center.	Operation Manual of Approach (O/M)
	Job description of "Approach" controller
	Agreement with ATC rooms of neighboring countries concerning ATS procedures and coordination
3. Acquaintance with the reference materials of the control center.	GAR-30
	GAR-21
	Aviation flight rules of RT
	Rules of use of air space of RT
	Air Code of RT
	Aviation rules concerning organization of air movement of RT
4. Study of the order and features of interaction with adjacent control centers (ATC sectors)	O/M
	LOA another ACC
	Coordination with air force and air defense forces.
5. Study of the order of interaction with adjacent control centers (ATC sectors), air force and air defense forces.	O/M
	Coordination with air force and air defense forces.

Attachment-4-2
Approach training program

6. Acquaintance with meteorological support of the control center.	Manual of use AVIMET system and all meteorological equipment.
7. Acquaintance with the means of the radio navigation and communication system and ATC at the control center.	Manual of use "Master" system
	Manual of use "Frequentis" system
8. Study of the job description and technology of the controller's work.	O/M
	Job description manual
9. Study of the rules of radio communication and the phraseology of radio communication.	GAR-30
	ICAO doc 9432
10. Study of the main provisions of international regulatory documents on air navigation.	ICAO PANS-ATM doc 4444

Attachment-4-3
Radar training program

Theoretical training (Radar)	Material
1. Study of the organizational structure of the air navigation system of the Republic of Tajikistan.	Structure of TAN
	United system of organization of air movement of RT
2. Acquaintance with the general technological process of the ATC at the control center.	Operation Manual of Radar (O/M)
	Job description of "radar" controller
	IFR SID/STAR
	VFR Charts
	Chart of emergency landing after take-off
	Table of QNH/QFE
3. Acquaintance with the reference materials of the control center.	GAR-30
	GAR-21
	Aviation flight rules of RT, Rules of use of air space of RT
	Air Code of RT
	Aviation rules concerning organization of air movement of RT
4. Study of the order and features of interaction with adjacent control centers	O/M
	Coordination with air force and air defense forces.
5. Study of the order of	O/M

Attachment-4-3
Radar training program

interaction with adjacent control centers (ATC sectors), air force and air defense forces.	Coordination with air force and air defense forces.
6. Acquaintance with meteorological support of the control center.	Manual of use meteorological system* and all meteorological equipment.
	*AVIMET(UTDD)
	*CRAMS(UTDT)
7. Acquaintance with the means of the radio navigation and communication system and ATC at the control center.	Manual of use "Master" system
	Manual of use "Frequentis" system
8. Study of the job description and technology of the controller's work.	O/M
	Job description manual
9. Study of the rules of radio communication and the phraseology of radio communication.	GAR-30
	ICAO doc 9432
10. Study of the main provisions of international regulatory documents on air navigation.	ICAO PANS-ATM doc 4444

Attachment-4-4
Tower training program

Theoretical training (Tower)	Material
1. Study of the organizational structure of the air navigation system of the Republic of Tajikistan.	Structure of TAN
	United system of organization of air movement of RT
2. Acquaintance with the general technological process of the ATC at the control center.	Operation Manual of Tower (O/M)
	Job description of "tower" controller
	Technological coordination with aerodrome services
	IFR SID/STAR
	VFR Charts
	Chart of emergency landing after take-off Table of QNH/QFE
3. Acquaintance with the reference materials of the control center.	GAR-30
	GAR-21
	Aviation flight rules of RT
	Rules of use of air space of RT
	Air Code of RT
	Aviation rules concerning organization of air movement of RT
4. Study of the order and features of interaction with adjacent control centers (ATC sectors)	O/M
	Coordination with air force and air defense forces.

Attachment-4-4
Tower training program

5. Study of the order of interaction with adjacent control centers (ATC sectors), air force and air defense forces.	O/M
	Coordination with air force and air defense forces.
6. Acquaintance with meteorological support of the control center.	Manual of use meteorological system* and all meteorological equipment.
	*AVIMET(UTDD),
	*CRAMS(UTDT)
	*TRANS OMIS RF(UTDL)
7. Acquaintance with the means of the radio navigation and communication system and ATC at the control center.	Manual of use "Master" system
	Manual of use "Frequentis" system
	Manual of use lighting system
	Manual of use MLAT(UTDT)
8. Study of the job description and technology of the controller's work.	O/M
	Job description manual
	Instruction of production of flight in aerodrome
	Technological coordination with aerodrome services
9. Study of the rules of radio communication and the phraseology of radio communication.	GAR-30
	ICAO doc 9432
10. Study of the main provisions of international regulatory documents on air navigation.	ICAO PANS-ATM doc 4444

AIR TRAFFIC CONTROLLER'S TRAINING IN JAPAN

Hideo Watanabe
Chief Advisor



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Проект по повышению потенциала в сфере обслуживания воздушного движения
The Project for Capacity Development in Air Traffic Services

To become an Air Traffic Controller in Japan

You must pass **the Air Traffic Controller adoption test** which is conducted annually by National Personnel Authority.

●Requirement (In fiscal 2017)

Basically the one who was **born from April 2,1987 to April 1,1996.**

●Contents of the examination

1. Basic knowledge necessary for Civil Servant
2. English (written examination ,Listening and Oral examination)
3. Aptitude as Air Traffic Controller
4. Medical examination
5. Oral examination
6. Radar simulator examination

●Results

Applicants	Total 1,045 (female 441)
Successful candidate	Total 138 (female 63)
Numbers expected to be employed	120



Road to a rated air traffic controller

Basic Training at Aeronautical Safety College
(Basic Air Traffic Controller License)

OJT at ACC/Airport Facility
(Area Control and Approach Control (Procedural)/Aerodrome Control)

**Approach Radar Control Technical Training
at ASC Iwanuma Training Center**

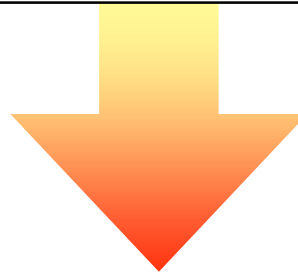
OJT at ACC/Airport Facility
(Area Radar Control/Approach Control and Approach Radar Control)



Initial Training for ATC

Basic Training at Aeronautical Safety College
: Training for Basic knowledge and techniques of air traffic control services

● **ATC Special Course**
(For University or College Graduates)
: **8 months**



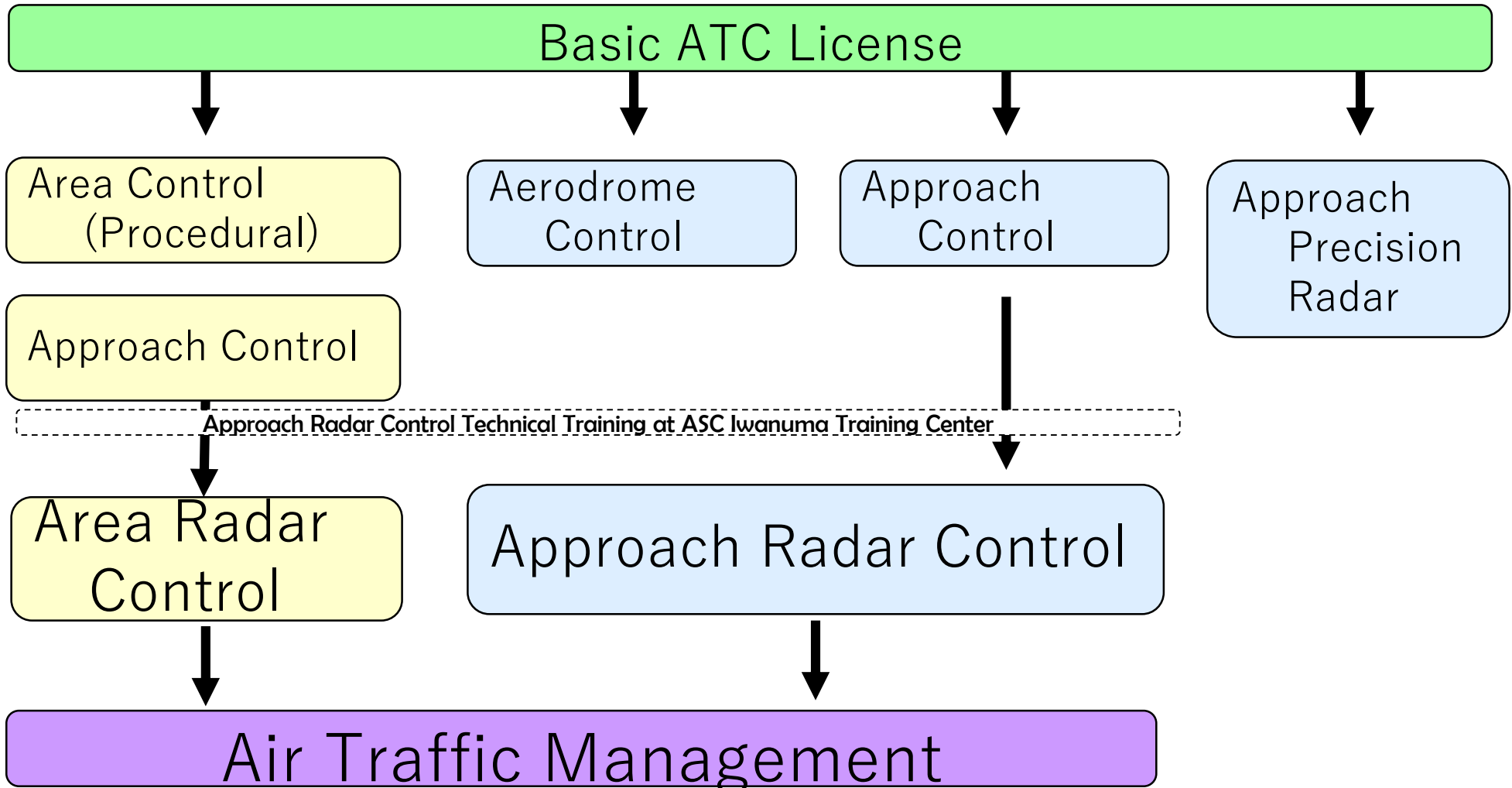
Basic ATC License



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License and Ratings



OJT at ATC Facility - 1

☆Ratings

- Aerodrome control
- Approach control (procedural)
- Approach radar control
- Approach precision radar control
- Area control (procedural)
- Area radar control
- Air traffic management

☆Initial Certificate	More than 3 months
Second Certificate	More than 2 months



ASC Iwanuma Training Center

- **Course focused on radar training**
 - : For the trainee before starting OJT for a radar control rating at airport
 - classroom lectures
 - technical training by using simulators

- **Courses**
 - Approach radar control training : 1 month**

▲ Other special training

ATC Training Officer course : 1 weeks

→ Mandatory training to become an ATC Training Officer at a facility

Supervisor course : 1 week

→ For Senior Air Traffic Controller



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OJT at ATC Facility - 2

- OJT Continues for radar control ratings
- Simulator training is also provided at ATC facilities
- OJT period depends on numbers of the ratings (certificates) which are necessary for working at a certain facility

Average example

Area Control Center	: 24~30 months
Large Airport	: 15~35 months
Medium-size Airport	: 12 months
Small Airport	: 6~12 months

- Even senior controllers has to be trained to get ratings every time they are transferred to other ATC facilities.



Other training at ATC facility

- Periodical Checking

- Once in a year
- Check knowledge and techniques concerning his/her effective ratings

- Periodical Checking for OJT Instructor

- Once in a year
- Check knowledge and techniques concerning OJT instruction.

- Periodical Training

- At least once a year
- Simulation of emergency or non-routine situations, Study and discussions about incidents, Study about latest operational issues concerned, etc.

- Aircraft Cockpit Observation

- At least once in every 4 years
 - ▲ Familiarization visit to other facilities
 - ▲ Lectures by pilots or specialists of Human factors
 - ▲ Overseas Aircraft Cockpit Observation (2 persons a year)



Language Proficiency Test for air traffic controllers in Japan

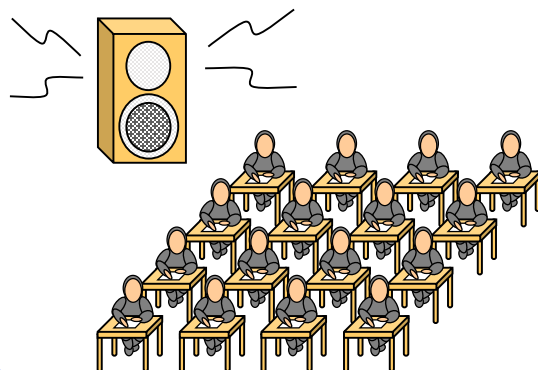
Japan has conducted the Language Proficiency Test since 2007 to demonstrate the ability of speaking and listening.

Listening Test

○Distribute CD which recorded the test question beforehand, and carry out the group examination for about 30 minutes.

Test method : Written examination.
Number of Question : 5 1 questions
(3questions per 1 dialogue × 1 7 dialogue)

Content of Question : It is constituted by phraseology used by plain English and A.T.C. communication including states of emergency. Decision of pass : 70% of more.



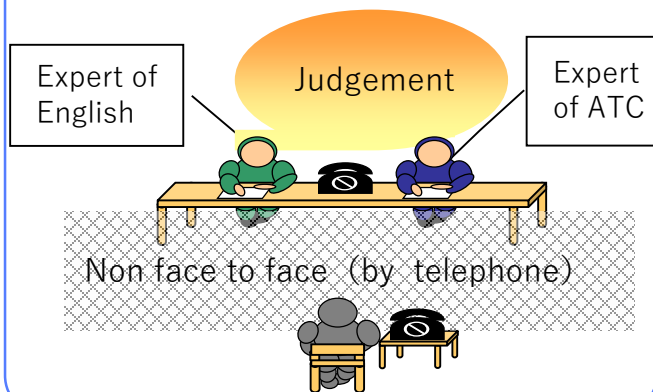
Interview Test

○Carry out Interview test for about 20 minutes in the situation of non-face-to-face (telephone).

【Flow of the Test】

- ① Warm Up (introduction)
- ② Single Picture Card (Use a picture strip)
- ③ Simulation of Air Traffic Control
- ④ Sequence Picture Card (Use 4 frame picture strip)
- ⑤ Wind Down (Finish)

○The judgment by multiple evaluator



Test Result

○Publish a certificate to a passer.

○Carry out an examination to periodically (as for every three years) and demonstrate ability.

AVIATION ENGLISH LANGUAGE PROFICIENCY CERTIFICATE

name _____

This is to certify the ability to speak and understand Aviation English.

DATE _____



Air Traffic Control Employee Examination Rules



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(Basic examination)

Article 1

The basic examination under Article 4, paragraph 1 of the Air Traffic Control Employee Test Rule (hereinafter referred to as "Regulation" of the Ministry of Land, Infrastructure and Transport Ministry's Directive No. 9 7, 1991), for each subject, 70% The person who obtained the certificate shall be accepted, and the certificate of the basic examination (No. 1 form) shall be issued.



Proficiency examination

Article 2

The proficiency examination under Article 4, paragraph 2 of the Regulations shall be carried out for officials who have received the notice under Article 7, Paragraph 1.

2-2 The proficiency examination listed in the middle column of the section on Air Traffic Management Control Operations (limited to those pertaining to airspace management and air traffic flow management) of Article 2, Paragraph 2, Article 4, Paragraph 2 shall mean terminal and radar control A skill test pertaining to the chair of business or air route control work.

Article 3

The skill test shall be passed by those who obtained a score of 70% or more for each subject.



Unlawful candidate

Article 3-2

For persons who have undergone basic tests or proficiency tests by means of fraud or who intend to receive it, they may suspend the test or cancel the decision to pass.

Examiner

Article 3-3

Rules The examining committee of Article 5 appoints from among those who have business experience prescribed by the Director General of the Airbase Director and who have all necessary and valid skills certificates that are prescribed by the head of the controlling institution to which they belong I shall do.

2. The term of examiner shall be three years.



Skill certificate

Article 4

The form of Air Traffic Control Skill Certificate (hereinafter referred to as "Skill Certificate") shall be in accordance with Form 2.

Limitation of skills certification

Article 5

The limitation of the scope of the work under Article 7 of the Regulations shall be made by designating the facility of conducting control task (hereinafter referred to as "control agency") and the control position. However, the control position shall be in accordance with the classification of the control position of Article 5 of the Air Traffic Control Employee Examination rules.



Limitation of skills certification

Article 6

The Director General of Aviation Bureau shall conduct the examination to change the limitation of the preceding Article (hereinafter referred to as "limited change examination") to the head of the control agency to which the official who intends to take the exams belongs.

2. The head of a control agency shall impose examiners of Article 5 of the Regulations on the execution of the examination set forth in the preceding paragraph.

3. The proviso of Article 3, Paragraph 3 and Article 4, Paragraph 2 of the Regulations and the provisions of Article 3 apply for the limited change examination. The provisions of Article 5-2 of the Regulations apply to specialized training pertaining to staff who intends to undergo limited change examination.

4. The head of the control agency shall make changes to the limitation by describing it in the skill certificate for those who passed the limited change examination.

(5) In the event that a change in the limit set forth in the preceding paragraph has been made, the head of a control agency shall submit a limited change notice (form 3) to the Director General of the Aviation Bureau.



(Accreditation of control agencies)

Article 7

The accreditation under Article 9, paragraph 2 of the Regulations shall be carried out for staff members that the staff acknowledged as having the ability to properly carry out the work pertaining to said control agencies for the subjects listed in Schedule 2 of the Regulations.

2. When the head of the control agency has conducted the certification set forth in the preceding paragraph, fill in the certificate control institution and certified anniversary date on the certificate of technical certification and imprint and impose a notice of the control agency certification notice (No. 4 form) to the director of the air navigation It must be submitted.



(Method of Physical Examination)

Article 8

Physical examination prescribed in Article 8 of the Regulations shall be carried out by examining the Physical Examination Certificate (Form 5) created by the doctor.

(Physical examination pass score)

Article 9

The form of the physical examination passed examination shall be in accordance with Form No. 6.



(Training supervisor)

Article 9-2

Regulations the training supervisor under Article 9, paragraph 4 shall be appointed from those who have completed the training prescribed by the Director General of Aviation Bureau and satisfy the following requirements.

(1) To have all necessary and effective skills certificates stipulated by the head of the control agency.

(2) To have business experience in the period specified by the head of the control agency.

2. The head of a control agency shall examine at least once in fiscal year in order to confirm that training supervisor is properly supervised for training.

3. When the head of the control agency has conducted the examination set forth in the preceding paragraph, he / she shall submit to the Director General of Air General the Director of Periodic Screening Supervision (4 types of No. 4).

4 The term of office of the training supervisor shall be three years.



(Periodic review)

Article 9-3

When the head of the control agency conducts the examination under Article 9-2 of the Regulation, the examination department itself shall apply the subject of the proficiency test listed in Schedule 2 of the Regulation Schedule.

2. When the head of a control agency has conducted the examination set forth in the preceding paragraph, he / she shall submit to the Director-General of Air General the periodic examination implementation notice (No. 2 of Form 4).

3. The head of the control agency shall limit the scope of control operations that the staff can perform until the examination is passed again for those who failed the examination under paragraph 1 and review again in case of reconsideration, the notice of implementation of reexamination (the 3 forms of No. 4) shall be submitted to the Director General of Aviation Bureau.



(Re-issue of skill certificate etc.)

Article 10

Officials conducting the control task shall immediately promptly reissue a reissue application form (No. 7 form) to the Director General of Aviation Bureau if they lose, break or defile their basic test pass certificate, skill certificate or physical examination pass certificate.

2. The application set forth in the preceding paragraph shall submit photographs of the standards stipulated in Article 7 (1) c (limited to the case of skill certificate) and the documents listed below.

(1) Basic examination passed certificate, skill certificate or physical examination pass letter (unless lost)

(2) In the case of losing, the reason and the date and time lost



(Return of skill certificate etc.)

Article 11

When an employee performing a control task finds what has been lost after having received re-issuance of a basic examination passing certificate, skill certificate or physical examination pass letter pursuant to the provisions of the preceding Article, or a basic examination passing certificate, when a skill certificate or a physical examination pass certificate becomes unnecessary, it shall return the one discovered or unnecessary together with the document with a statement to that effect to the director.



(Changes in the description matter)

Article 12

When an employee performing a control, task makes a change in the matter described in the basic examination pass certificate, skill certificate or physical examination pass letter (excluding domicile and current address), promptly you must submit the written application change application form (2nd form of No. 7) to the Director General of Aviation Bureau.

2. The following documents shall be attached to the application form set forth in the preceding paragraph.

(1) Basic certification certificate, skill certificate or physical examination pass certificate

(2) Family registration abstract other documents sufficient to prove the fact of change in the preceding paragraph.



Article 13

Director General of Aviation or Director of Regional Aviation Bureau shall apply to the Aircraft Security College Rules (Ministry of Land, Infrastructure, Transport and Tourism No.101) Article 4, paragraph 6, it shall be made by the head of the control agency to which the staff who intends to receive the specialized training belongs.



(Management of specialized training)

Article 14

The specialized training conducted by the head of the control agency pursuant to the provision of the preceding article shall be the air traffic control by the Air Traffic Control Employee Training Instructor Test Rule (Ministry of Land, Infrastructure and Transport Ministry Directive No. 3) appointed by the head of the control agency Employee training instructor certificate shall be managed by the staff member.



(Specialized training results report)

Article 15

The head of the control agency shall, with respect to the staff pertaining to the exclusive railroad exercise conducted by the head of the control agency pursuant to the provisions of Article 13, shall notify the 1st field special training seminar report (No. 8 form, No. 2, No. 8, No. 9, No. 9, No. 2, No. 3, No. 3 or No. 1 0) shall be submitted to the Director General of the Aviation Bureau



(Specialized training details)

Article 16

The head of the control agency shall, for each of the items listed in Schedule 2 of the Regulations, refer to the details of the specialized training at the control institution concerning the items listed in the columns of Appended Table 1 and Appended Table 2 (hereinafter referred to as " ") And report it to the director of the airline.

2. The head of a control agency shall conduct specialized training in accordance with the training details set forth in the preceding paragraph.



(Specialized training detail rule)

Article 16

The head of the control agency shall, for each of the items listed in Schedule 2 of the Regulations, refer to the detail rules of the specialized training at the control institution concerning the items listed in the columns of Appended Table 1 and Appended Table 2 and report it to the Director General of Aviation Bureau.

2. The head of a control agency shall conduct specialized training in accordance with the training detail rules set forth in the preceding paragraph.



(Notice of termination of specialized training)

Article 17

The head of the control agency shall be the official of the control agency under the provisions of Article 13 when completing a specialist training of a member, he / she shall promptly notify the Director General of Aviation Bureau by attaching the following documents.

(1) When an employee who has finished specialized training takes a skill test, the following documents and photographs

- a. Proficiency Test Examination Notice (No. 1 No. 1 Style)
- b. Final Professional Training Report
- c. Photographs of 3 centimeters in width and 2.5 centimeters horizontally showing the upper body in a hat in the last 6 months (limited to the case of first taking a proficiency test.)

(2) When the staff who finished the specialized training examine the limited change test, the limited change notification specified in Article 6, paragraph 5



(Examination report)

Article 17-2

When an examiner conducts a skill examination ordered by an examiner pursuant to the provisions of Article 5 of the Regulation, it shall notify the Director General of Aviation Bureau by the air traffic control official examination report (No.12 form). On the other hand, if the limited change test was carried out pursuant to the provisions of Article 6, paragraph 1, the report of the test results carried out shall be reported and one reporting that the test was implemented to the head of the control agency.



(Re-appointment)

Article 18

The provisions from Article 4 to the preceding Article shall apply mutatis mutandis to officials who are to be reappointed pursuant to the provisions of Article 81- 4 Paragraph 1 of the National Public Service Act (Act No. 120 of 1943). However, Provided, that officials who are reappointed on the day following the retirement date and those who renew their terms of office pursuant to the provisions of paragraph 2 of the same Article shall validate the already issued skill certificate and physical examination pass letter for the term of office. We will not re-issue the physical examination pass certificate.



Article 19

In this rules, the phrase "Director General of Aviation Bureau" shall be deemed to be replaced with " Director of Regional Aviation Bureau " if it belongs to the authority of the Director of Regional Aviation Bureau pursuant to the provisions of the rules.



Training in Tokyo ACC



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The Project for Capacity Development in Air Traffic Services



1 head of Instructor

Training Room



4 CAB Instructor



7 contract instructor (retired controllers)



1 English teacher



55 Trainee + **5** new comers will be assigned every four months.



50 Examiner

There are 2 to 3 examiners per team, and instructor at training room

Periodic review : once year **335 controllers**

Responding with each team (18 teams), It is divided into three regions, each consisting of seven sectors. It is compatible with E-Learning, and we are conducting field tests by connecting with the server of the ministry.



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1. Written test:

New or unqualified person → Map drawing(Whole route) and training materials.

2. Criteria of written and practical test is 70%

3. Training course: For new or unqualified person need three months.

- (1) Theoretical(basic) training 1 month
- (2) Radar simulator training 1 month
- (3) Specialized training 1 month



Examination system development

Hideo Watanabe
Chief Advisor



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Examination system development

1. To explain the training system and the examination system in Japan and ICAO
2. To implementation of paper test
3. To set Criteria (70%)
4. To place instructors in the training center
5. To appoint appropriate examiner



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●Requirement (In fiscal 2017)

Basically the one who was **born from April 2,1987 to April 1,1996.**

●Contents of the examination

1. Basic knowledge necessary for Civil Servant
2. English (written examination ,Listening and Oral examination)
3. Aptitude as Air Traffic Controller
4. Medical examination
5. Oral examination
6. Radar simulator examination

●Results

Applicants	Total 1,045 (female 441)
Successful candidate	Total 138 (female 63)
Numbers expected to be employed	120



Road to a rated air traffic controller

Basic Training at Aeronautical Safety College
(Basic Air Traffic Controller License)

OJT at ACC/Airport Facility
(Area Control and Approach Control (Procedural)/Aerodrome Control)

**Approach Radar Control Technical Training
at ASC Iwanuma Training Center**

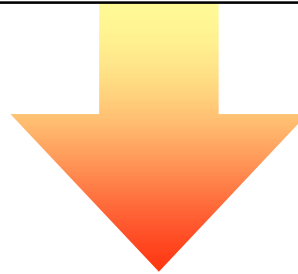
OJT at ACC/Airport Facility
(Area Radar Control/Approach Control and Approach Radar Control)



Initial Training for ATC

Basic Training at Aeronautical Safety College
: Training for Basic knowledge and techniques of air traffic control services

● **ATC Special Course**
(For University or College Graduates)
: **8 months**



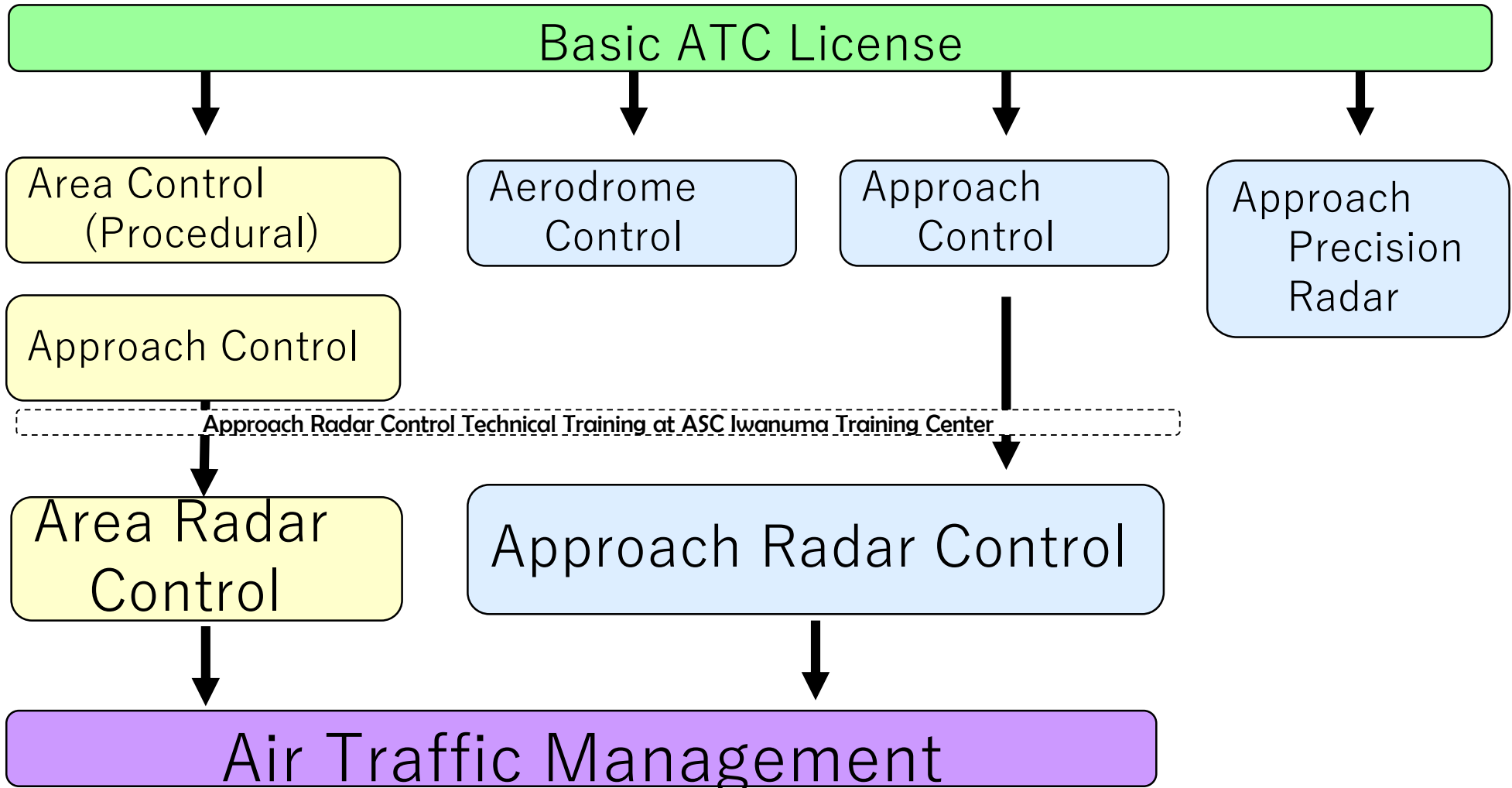
Basic ATC License



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License and Ratings



OJT at ATC Facility - 1

☆Ratings

- Aerodrome control
- Approach control (procedural)
- Approach radar control
- Approach precision radar control
- Area control (procedural)
- Area radar control
- Air traffic management

☆ Initial Certificate More than 3 months
Second Certificate More than 2 months



ASC Iwanuma Training Center

- **Course focused on radar training**
: For the trainee before starting OJT for a radar control rating at airport
classroom lectures
technical training by using simulators

- **Courses**
Approach radar control training : 1 month

▲ Other special training

- ATC Training Officer course : 1 weeks
→ Mandatory training to become an ATC Training Officer at a facility
- Supervisor course : 1 week
→ For Senior Air Traffic Controller



OJT at ATC Facility - 2

- OJT Continues for radar control ratings
- Simulator training is also provided at ATC facilities
- OJT period depends on numbers of the ratings (certificates) which are necessary for working at a certain facility

Average example

Area Control Center	: 24~30 months
Large Airport	: 15~35 months
Medium-size Airport	: 12 months
Small Airport	: 6~12 months

- Even senior controllers has to be trained to get ratings every time they are transferred to other ATC facilities.



Other training at ATC facility

- Periodical Checking

- Once in a year
- Check knowledge and techniques concerning his/her effective ratings

- Periodical Checking for OJT Instructor

- Once in a year
- Check knowledge and techniques concerning OJT instruction.

- Periodical Training

- At least once a year
- Simulation of emergency or non-routine situations, Study and discussions about incidents, Study about latest operational issues concerned, etc.

- Aircraft Cockpit Observation

- At least once in every 4 years
 - ▲ Familiarization visit to other facilities
 - ▲ Lectures by pilots or specialists of Human factors
 - ▲ Overseas Aircraft Cockpit Observation (2 persons a year)



Language Proficiency Test for air traffic controllers in Japan

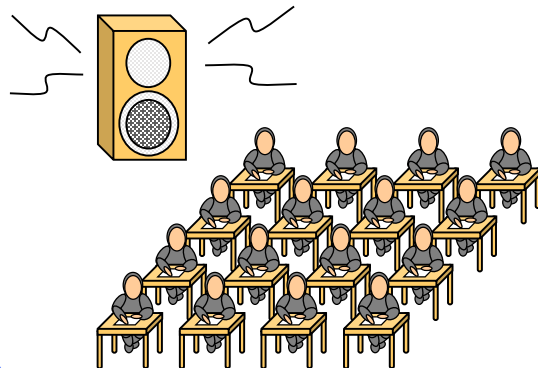
Japan has conducted the Language Proficiency Test since 2007 to demonstrate the ability of speaking and listening.

Listening Test

○Distribute CD which recorded the test question beforehand, and carry out the group examination for about 30 minutes.

Test method : Written examination.
Number of Question : 5 1 questions
(3questions per 1 dialogue × 1 7 dialogue)

Content of Question : It is constituted by phraseology used by plain English and A.T.C. communication including states of emergency. Decision of pass : 70% of more.



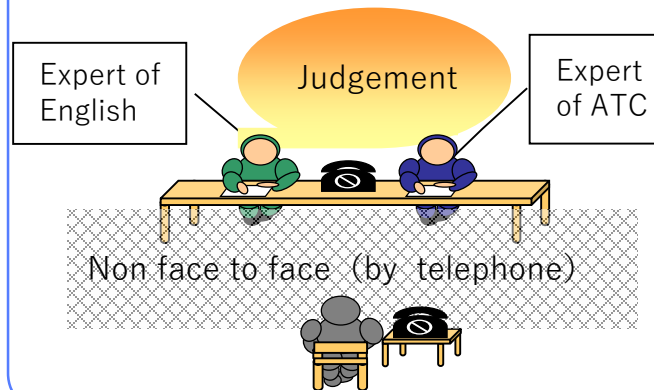
Interview Test

○Carry out Interview test for about 20 minutes in the situation of non-face-to-face (telephone).

【Flow of the Test】

- ①Warm Up (introduction)
- ②Single Picture Card (Use a picture strip)
- ③Simulation of Air Traffic Control
- ④Sequence Picture Card (Use 4 flame picture strip)
- ⑤Wind Down (Finish)

○The judgment by multiple evaluator



Test Result

○Publish a certificate to a passer.

○Carry out an examination to periodically (as for every three years) and demonstrate ability.

AVIATION ENGLISH LANGUAGE PROFICIENCY CERTIFICATE

name _____

This is to certify the ability to speak and understand Aviation English.

DATE _____



Examination System in Japan



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Examination rule in Japan

(Basic examination)

Article 1

The basic examination under Article 4, paragraph 1 of the Air Traffic Control Employee Test Rule (hereinafter referred to as "Regulation" of the Ministry of Land, Infrastructure and Transport Ministry's Directive No. 97, 1991), for each subject, **the person has a score of 70% or more, who obtained the certificate shall be accepted**, and the certificate of the basic examination (No. 1 form) shall be issued.



Examination rule in Japan

(Proficiency examination)

Article 2

The proficiency examination under Article 4, paragraph 2 of the Regulations shall be carried out for officials who have received the notice under Article 7, Paragraph 1.

2-2 The proficiency examination listed in the middle column of the section on Air Traffic Management Control Operations (limited to those pertaining to airspace management and air traffic flow management) of Article 2, Paragraph 2, Article 4, Paragraph 2 shall mean terminal radar control and area control position.



Examination rule in Japan

Article 3

The skill test shall be passed by those who obtained **a score of 70%** or more for each subject.

(Examiner)

Article 3-3

Rules The examiner shall be appointed from among those who have ATC experience prescribed by the DGCA and who have all necessary and valid skills certificates that are prescribed by the head of the controlling institution to which they belong.

2. The term of examiner shall be three years.



Examination rule in Japan

(Training supervisor)

Article 9-2 Regulations the training supervisor under Article 9, paragraph 4 shall be appointed from those who have completed the training prescribed by the Director General of Aviation Bureau and satisfy the following requirements.

(1) To have all necessary and effective skills certificates stipulated by the head of the control agency.

(2) To have business experience in the period specified by the head of the control agency.

2. The head of a control agency shall examine at least once in fiscal year in order to confirm that training supervisor is properly supervised for training.

3. When the head of the control agency has conducted the examination set forth in the preceding paragraph, he / she shall submit the Director of Periodic Screening Supervision (4 types of No. 4) to the DGCA.

4 The term of office of the training supervisor shall be three years.



Examination rule in Japan

(Periodic review)

Article 9-3

When the head of the control agency conducts the examination under Article 9-2 of the Regulation, the examination department itself shall apply the subject of the proficiency test listed in Schedule 2 of the Regulation Schedule.

2. When the head of a control agency has conducted the examination set forth in the preceding paragraph, he / she shall submit the periodic examination implementation notice (No. 2 of Form 4) to the Director General of Air General.

3. The head of the control agency shall limit the scope of control operations that the staff can perform until the examination is passed again for those who failed the examination under paragraph 1.

Review again in case of reconsideration, the notice of implementation of re-examination (the 3 forms of No. 4) shall be submitted to the Director General of Civil Aviation Bureau.

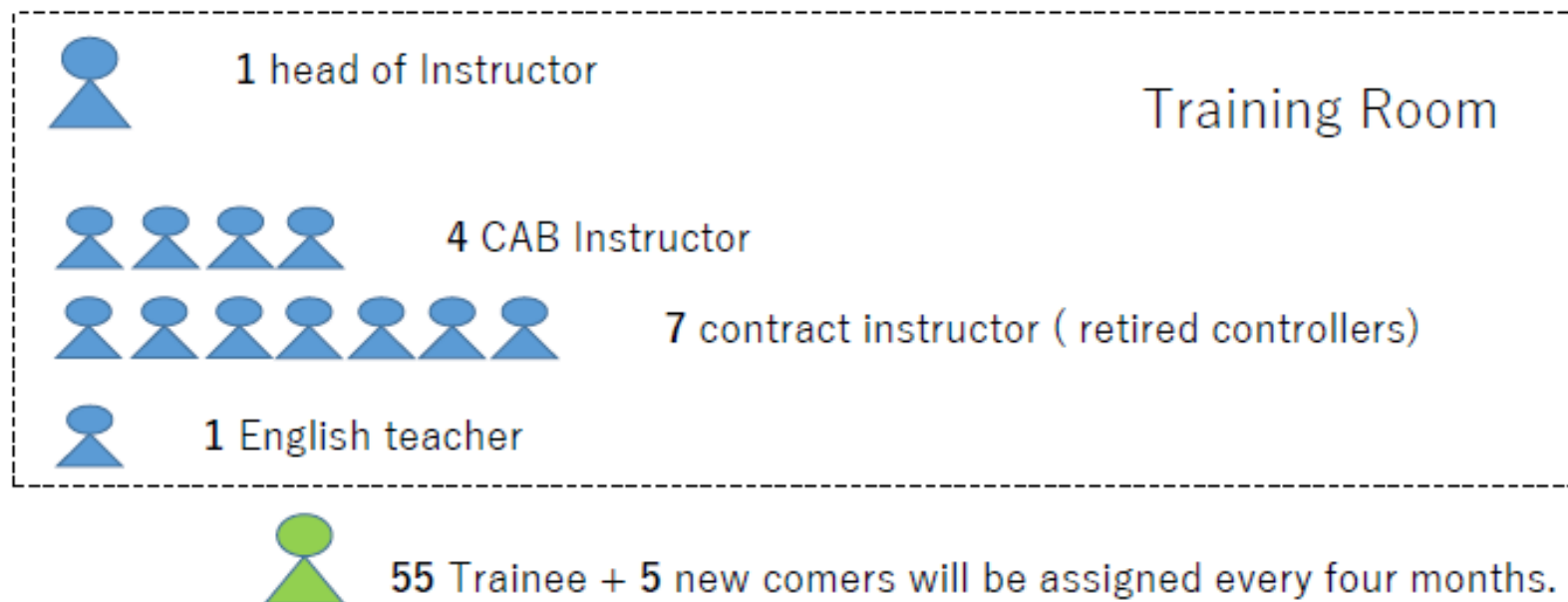



Tokyo Area Control Center ~Training Room~



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 **50 Examiner**

There are 2 to 3 examiners per team, and instructor at training room

Periodic review : once year **335 controllers**

Responding with each team (18 teams), It is divided into three regions, each consisting of seven sectors. It is compatible with E-Learning, and we are conducting field tests by connecting with the server of the ministry.

1. Written test:

New or unqualified person → Map drawing(Whole route) and training materials.

2. Criteria of written and practical test is 70%

3. Training course: For new or unqualified person need three months.

- (1) Theoretical(basic) training 1 month
- (2) Radar simulator training 1 month
- (3) Specialized training 1 month



ICAO training system



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1. Knowledge Examination

1.1 Aerodrome Control Training course –ICAO052

The Final Examination shall consist of following subjects:

- 1) Aerodrome Control Service – TWR
- 2) Emergency Procedure
- 3) Aviation Meteorology(MET)
- 4) Aerodrome Control Simulation



1.2 Approach Control (Non Radar) Training course –ICAO 053

The Final Examination shall consist of following subjects:

- 1) Aerodrome Control Practices and Procedures
- 2) Aviation Meteorology
- 3) Search & Rescue
- 4) Emergency Procedure
- 5) Approach Control Simulation

1.3 Approach/Area Control Surveillance course –ICAO 054

The Final Examination shall consist of following subjects:

- 1) Radar Theory
- 2) Radar Operation Techniques & Procedure
- 3) Radar Control Simulator



1.4 Area Control (Non Radar) course –ICAO 055

The Final Examination shall consist of following subjects:

- 1) Area Control Practices and Procedures
- 2) Aviation Meteorology
- 3) Search & Rescue
- 4) Emergency Procedure
- 5) Telecommunication Procedures
- 6) Area Control Simulation



Model of examination system

1.5 Conduct Examination

In respect of the subjects listed above, written examinations shall be conducted before the end of course.

The pass mark for each subject is 70%.

The Simulator practical examination shall be conducted at the end of the course. **The pass mark for the practical test (simulator) is 70%.**

The practical test shall be conducted by the examiners appointed DG of CAA.

It is compulsory that trainee passes in all five subjects. If a trainee fails to obtain mark equal to or greater than 70% in respect of any subject, he/she shall be referred in that subject.



2. The examination procedure

2.1 Preparation of Question paper/test procedures

The **Chief instructor** shall make arrangements to have question Papers/test procedures prepared in advance in respect of each test to be conducted as per the course guide of course, by the relevant examiners, appointed by DGCA.

When several **examiners** contribute to a single test, the **chief instructor** shall indicate to each of them the percentage fraction allocated to the questions to be sent by him/her out of the total marks.

The **examiner** should be the resource person(s) who conducted the lecture/training activity relevant to the test.



2.2 Conduct the examination

2.2.1 Written test

Chief instructor shall provide the following to the examination hall.

- 1) Any requirement stipulated as per 2.1 above, in adequate supply.
- 2) A dictionary/glossary and such other reference guides for use of any candidate to overcome language barriers.

2.2.2 Practical test

Chief instructor shall provide the following to the examination hall.

- 1) Any requirement stipulated as per 2.1 above, in adequate supply.
- 2) A dictionary/glossary and such other reference guides for use of any candidate to overcome language barriers.

The entire test session in respect of each candidate shall be recorded. If the test is performed on equipment with built-in recording facilities, such a facilities shall be used for recording. In all cases, whenever it is practical, the test shall be either video or audio covered as appropriate.



2.2.3 Scrutiny of answer scripts/evaluation of performance

2.2.3.1 Written Tests

The **examiner** shall scrutinize the answer scripts as per the moderated marking scheme and use red ink for marking. The benefit of all doubts shall be given to the candidate. On completion of the scrutiny, the **examiner** shall record the marks obtained by all candidates on the mark sheet provided by **chief instructor**, sign it and return it to the **chief instructor** along with the answer scripts and marking scheme under confidential cover.

On receipt of the answer-scripts, the **chief instructor** shall submit them along with the marking scheme and the mark sheet(s) to the **moderator**. The **moderator** shall examine the answer scripts if necessary, fill the column for total/average where relevant and sign the mark sheet(s).

Any discrepancies noted may be resolved through discussion between the moderator and examiner. The scrutinized answer-scripts shall be kept in the safe custody the **chief instructor** until the results are finalized.



2.2.3.2 Practical Tests

The evaluation shall be conducted while the test is in progress, based on the moderated marking scheme and the result shall be recorded as soon as is over. Replays of recording made of the test session may be used for verification. However, under no circumstances shall an evaluation be based solely on the replay of a recording.

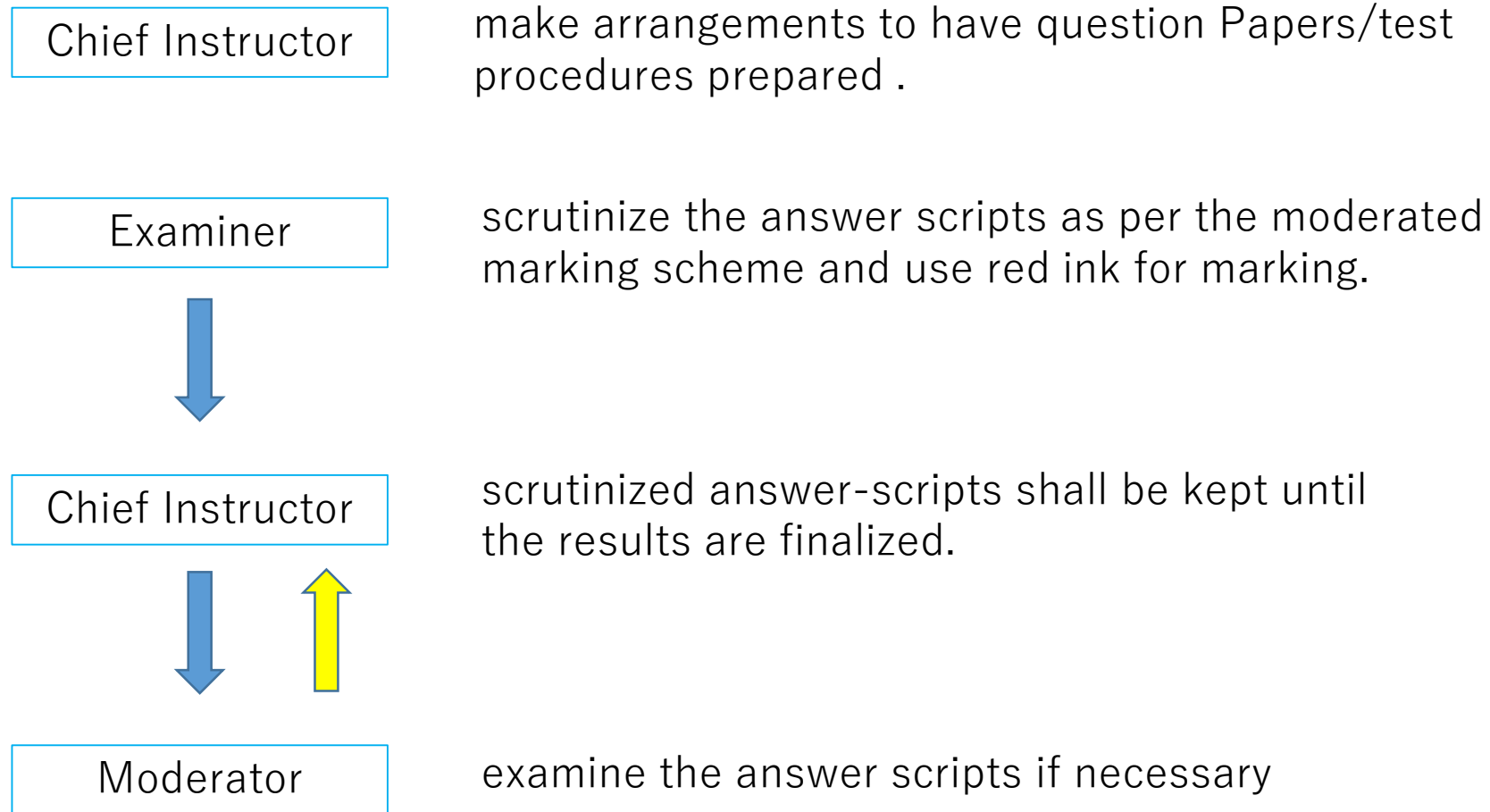
On completion of the test, a mark –sheet shall be filled indicating the marks obtained by all candidates, signed by all **examiners** and handed over to the **chief instructor**.

The **chief instructor** shall then obtain the signature of the **moderator** on the mark-sheet.

The **moderator** may request to watch/listen to the replays of recording of test session, if necessary.



Conduct Written Test



Recommendation

1. To conduct paper test at end of the training

Currently, the exam is being conducted in oral examination.
it is possible to clearly evaluate trainees by conducting a written exam. This makes it possible to maintain ICAO standard training.

2. To set 70 % criteria for examination.

The evaluation becomes clearer by setting criteria, and it becomes possible to maintain training based on ICAO standards.

3. To take place instructor in the training center

By arranging day-working instructors at the training center, you can do theoretical training without having to trainee alone, and you can do ICAO level of training.

4. To make a rule for examination system

In order to effectively training, it is necessary to prepare rules on the training system.



Q & A



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