

Prioritization of the Tsunami Countermeasure among air ports

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1. Alternative airport in the Great East Japan disaster

During the earlier stage of the Great East Japan disaster (approximately 72 hours) while more than 20 thousand people were isolated (in more than 75 places), we saw rescues were implemented through lifting in the air and takeoff/setdown on the roof by the Rotary-wing aircraft. Sendai airport has got damage in Miyagi prefecture, but it performed emergency recovery after four days of serious efforts by the staff. While that time, nearby Camp Kasuminome of the Japan Ground Self-Defense Force has supported such aircrafts as an alternative airport. Also in the public airport in neighbor prefecture, there implemented the broad area medical transportation by the DMAT (Disaster Medical Assistance Team) by means of the Fixed-wing aircraft as well as the Rotary-wing aircraft. In that disaster, it was revealed the actual state of the aerial action of the search and rescue supported by alternative airports in the earlier stage.

2. Trial of the prioritization of airports

As there are abundant cases of the Risk qualitative evaluation in the aviation field for the accident countermeasure, we are to adopt a simple qualitative evaluation as a review method to prioritize the Tsunami countermeasure of airports. At that time, we have made a focus onto secure the search, rescue and life saving action in the earlier stage of the Tsunami and made a review based on the possibility of securing the alternative airport since the height of the Tsunami as a cause of the damage is remarkably significant and hard to estimate.

Since the risk is a combination of the occurrence frequency and result significance, we can raise the prevention (level raising), avoidance (alternate), imputation (insurance) and the like as that examples.

About the occurrence frequency, we have made the ranking based on the magnitude of urgency from the Nankai trough earthquake from the description on the “Airport Tsunami countermeasure review committee report (2011)” of the Aviation Division and the allowance height from the estimated Tsunami height of the airport ground level. Also on the result significance, we have determined to do the ranking based on the concept of securing the Rotary-wing aircraft imperative to implement the research and rescue first and securing the Fixed-wing aircraft imperative to implement the broad area medical transportation second, taking into consideration whether there is an alternative airport nearby that can undertake such a task. (Fig. 1)

発生 頻度	南海トラフ 切迫性大	余裕高+0m	大	結果重大性		指標例
		余裕高+2m		致命的	回転翼機不可 人命救助の機会損失大	50キロ圏内に 代替空港なし
南海トラフ 切迫性小	余裕高+4m	余裕高+0m	小	重大	6時間以内、固定翼機 人命救助の機会損失中等	100キロ圏内に 代替空港なし等
	余裕高+2m	余裕高+4m		軽微	6時間以内、固定翼機 によるDMAT活動が可能	2時間以内に 点検・運用

Fig. 1 Ranking of the Occurrence frequency and result significance

3. Result of the trial

When we have made a trial of the qualitative

evaluation of existing airports based on the above, we could have a classification of three groups of the airport that the rank is given from the top right to the bottom left as shown in the Fig. 2.

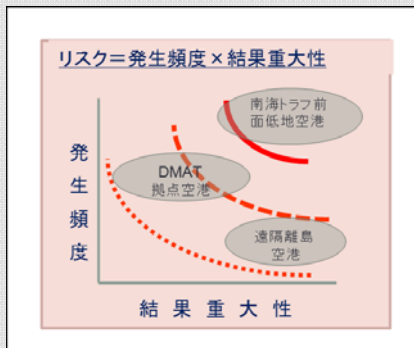


Fig. 2 Example of the qualitative evaluation trial

“Nankai trough front low ground airport” is the one that has a great urgency and little allowance in the ground level, and further there is no alternative airport nearby, therefore ongoing now is the training that uses the Helicopter mounted Self-Defense ship as the alternative airport. It is scheduled to call the DMAT and receive the medical transportation in the “DMAT base airport” and also in airports in the maritime area partially. “Long distance isolated island airport” has a low occurrence frequency, but having no land route, it is imperative to keep collaboration with the main land and neighbor islands as it is anticipated to see a serious damage once the disaster occurred. From now on, we are to proceed on reviewing the research such as on the alternative broad area trunk line traffic, introduction of the qualitative evaluation and so on.