

モンゴル国
モンゴル国道路運輸開発省 (MRTD)

モンゴル国
新ウランバートル国際空港の人材育成
及び運営・維持管理能力向上
プロジェクト
【有償勘定技術支援】

業務完了報告書

2021年10月

独立行政法人
国際協力機構 (JICA)

一般財団法人航空保安無線システム協会 (JRANSA)
一般財団法人航空交通管制協会 (ATCAJ)

社基

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事業完了報告書

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略語集

略語	英語	日本語
AFL	Airfield Light	空港灯火
AIP	Aeronautical Information Publication	航空路誌
AIS	Aeronautical Information Services	航空情報業務
ANS	Air Navigation Services	航空管制サービス(航空交通業務)
ATC	Air Traffic Control	航空管制業務
ATCAJ	Air Traffic Control Association, Japan	一般財団法人航空交通管制協会(ATCAJ)
ATM	Air Traffic Management	航空交通管理
CAAM	Civil Aviation Authority of Mongolia	モンゴル国民間航空庁
CKIA	Chinggis Khaan International Airport	チンギスハーン国際空港(注: NUBIAの名称。NUBIA開港前は旧空港の名称であった。)
CNS	Communications, Navigation and Surveillance	通信、航法、監視
C/P, CP	Counterpart	カウンターパート
CS	Customer Satisfaction	顧客満足
DAC	Development Assistance Committee	開発援助委員会
DME	Distance Measuring Equipment	距離測定装置
FI	Flight Inspection	飛行検査
FPD	Flight Procedure Design	飛行方式設計
FV	Flight Validation	飛行検証
IATA	International Air Transport Association	国際航空運送協会
ICAO	International Civil Aviation Organization	国際民間航空機関
ILS	Instrument Landing System	計器進入システム
JALUX	JALUX Inc.	株式会社JALUX
JAT	Japan Airport Terminal Co., Ltd.	日本空港ビルデング株式会社
JCAB	Japan Civil Aviation Bureau	(日本)航空局
JCM (JCC)	Joint Coordination Meeting (Joint Coordination Committee)	合同調整会議 (合同調整委員会)
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構(JICA)
JRANSA	Japan Radio Air Navigation Systems Association	一般財団法人航空保安無線システム協会
LLC	Limited Liability Company	有限責任会社
LOI	Local Operation Instruction	業務処理要領
MLAT	Multi-lateration	マルチラテレーション装置
MLIT	Ministry of Land, Infrastructure, Transport and Tourism	(日本)国土交通省
MRTD	Ministry of Road and Transport Development of Mongolia	モンゴル国道路運輸開発省
MS	Monitoring Sheet	モニタリングシート
NAA	Narita International Airport Corporation	成田空港株式会社
NCAC	National Civil Aviation Center	モンゴル民間航空センター
NSO	National Statistics Office	モンゴル国家統計局
NUBIA	New Ulaanbaatar International Airport	新ウランバートル国際空港(注:開港後、チンギスハーン国際空港に名称変更された。)
O&M	Operation and Maintenance	運営・維持管理

ODA	Official Development Assistance	政府開発援助
OECD	Organization for Economic Co-operation and Development	経済開発協力機構
OJT	On the Job Training	現場訓練
ORAT	Operational Readiness and Airport Transfer	運用準備・空港移転
PBN	Performance Based Navigation	性能準拠型航法
PC	Personal Computer	パーソナルコンピューター
PCR	Project Completion Report	業務完了報告書/事業完了報告書
PDM	Project Design Matrix	プロジェクト設計マトリクス
PIU	Project Implementation Unit (for the NUBIA construction project)	(NUBIA建設プロジェクトの) プロジェクト実施ユニット
PO	Plan of Operation	活動計画表
POA	Pre-Operation Administration	供用準備組織
RCAT	Readiness check and Transfer	準備確認・移転作業
R/D, RD	Record of Discussions	合意文書
SPC	Special Purpose Company	特別目的会社(新空港運営会社)
VOR	VHF Omni-directional Radio Range	超短波全方向式無線標識施設
WG	Working Group	ワーキンググループ

プロジェクト配置図



(広域)



(ウランバートルと NUBIA)

写真



Source: JICA Mongolia Facebook

新ウランバートル国際空港 (NUBIA)



Source: JICA Mongolia Facebook

新ウランバートル国際空港 (NUBIA)



Source: JICA Mongolia Facebook

新ウランバートル国際空港 (NUBIA)



ANS WGとJICA専門家(空港管制分野)



JICA専門家によるNUBIA現地調査



ワークショップ(ANSプロジェクト)



安全性評価タスクフォース会議



ワークショップ(GNS)



ワークショップ(灯火/電気)



ワークショップ(飛行検査)



CAAMでの飛行方式設計研修



中部国際空港における航空管制分野本邦研修



日本の飛行検査センターにおける飛行検査官本邦研修

成田国際空港での灯火/電気本邦研修



CAAMとNUBIA LLCによるエマージェンシーオペレーション訓練 (RCAT)



飛行検証の会議 (CAAM, MIAT, JICA 専門家)

CAAM 飛行検査官による飛行検査

1. プロジェクトに関する基本情報

1. 国名

モンゴル国

2. プロジェクト名

新ウランバートル国際空港の人材育成及び運営・維持管理能力向上プロジェクト【有償勘定技術支援】

3. プロジェクト期間

計画： 2014年12月～2017年7月（32ヶ月）、目標空港開港日は2017年5月

実績： 2015年 1月～2021年9月（80ヶ月）、実際の空港開港日は2021年7月4日

当初のNUBIA開港目標時期は、2017年5月であった。しかし、実際の新空港の開港は、空港施設建設の遅延、NUBIA運営会社設立遅延、COVID-19の感染拡大の影響により約4年遅れることとなった。その結果、本プロジェクトの期間も約4年の延長がなされた。

4. プロジェクトの背景

旧チンギスハーン国際空港の旅客需要は、近年急速に伸びており、2006年46万人であった年間旅客数は、2012年には100万人に達している。増大する航空需要に対応すべく、モンゴル政府は新空港を建設することとし、2008年に我が国との間で「新ウランバートル国際空港建設事業」に係る円借款契約を締結し、2020年4月に同事業が完了した。しかしながら、NUBIAのスムーズな運営・維持管理を行うために、空港の運営・維持管理を担う人材の育成や維持管理体制の整備が必要とされた。

また、2013年2月にモンゴル国会で承認された「2020年までの民間航空分野に於ける国家政策」では、国際基準に適合したハイレベルのセキュリティや安全性が確保された経済的かつ競争力のある民間航空サービスの構築に加え、新ウランバートル国際空港を北東アジアの旅客や貨物輸送のハブとして発展させることとしている。

さらに、日本の対モンゴル国国別援助方針及びJICAの国別分析ペーパーにおいては、「ウランバートル都市機能の強化」を重点分野として掲げており、新ウランバートル国際空港建設事業はその趣旨に合致するものである。また、投資環境の整備及び持続可能な経済発展に関する日本・モンゴル間の協力について、両国首相間で確認された「エルチイニシアティブ」（2013年3月30日）にて、同空港の建設とそれを通じた利便性の向上が掲げられている。更に、同年9月13日に両国首相による共同声明で発表された「戦略的パートナーシップのための日本・モンゴル中期行動計画（2013-2017年）」において、両国政府が空港関連施設の運営・維持管理能力の向上のために協力することが掲げられている。

以上のことから、本プロジェクトは、モンゴル国及び日本国の方針に極めて合致するものである。

5. 上位目標とプロジェクト目標

5-1 上位目標

「モンゴル国の首都ウランバートルのゲートウェイ機能が強化され、航空旅客増加への対応が可能となる。」

5-2 プロジェクト目標

「新ウランバートル国際空港の円滑な供用に資するため、運営・維持管理体制及び能力が強化される。」

6. プロジェクトの実施機関

モンゴル国道路運輸開発省(MRTD) およびモンゴル国民間航空庁(CAAM)

II. プロジェクトの結果

1. インプットと活動

1-1 日本側のインプット

a) 合計費用

計画： 350 百万円
実績： 589 百万円

b) JICA専門家

JICA専門家のインプットの計画と実績を表1-1.1に示す。

表1-1.1 JICA専門家のインプット(モンゴル現地と日本国内での人月割当)

担当業務/技術分野	計画	実績
長期専門家	64.00	100.14
- Chief Advisor	32.00	41.57
- Airport Relocation/Project Coordinator		3.67
- Project Coordinator	32.00	54.90
短期専門家(空港運営)	73.95	66.96
- Project Manager/Airport Relocation/ Civil Engineer/Snow Removal (1)	3.92	5.90
- Deputy Project Manager/Terminal Facilities/Communication Facilities (1)/Information Technology (1)	2.08	4.78
- Ground Handling Service/Cargo (1)	1.70	4.10
- Ground Handling Service/Cargo (2)	2.00	
- Cargo (1)	1.70	3.61
- Cargo (2)	2.00	
- Security (1)	0.95	2.53
- Security (2)	1.90	
- Airport Operation/Safety (1)	1.65	2.81
- Airport Operation/Safety (2)	1.80	
- Airport Planning/Organization/Human Resource	1.80	1.80
- Civil Engineer/Snow Removal (1)	2.35	
- Civil Engineer/Snow Removal (2)	1.30	1.30
- Special Equipment (1)	2.35	2.35
- Special Equipment (2)	1.30	1.30
- Machinery Facilities (1)	2.50	2.85
- Machinery Facilities (2)	1.30	1.30

- Electrical Equipment (1)	2.50	2.50
- Electrical Equipment (2)	1.30	1.30
- Communication Facilities (1)	2.35	
- Communication Facilities (2)	1.30	1.30
- Information Technology (1)	1.60	
- Information Technology (2)	0.70	0.70
- Fuel Supervision (Safety Management)	1.80	3.45
- Fuel Business Management	2.35	
- Fuel Facility Management	5.30	3.25
- Fuel Operations and Maintenance	4.05	2.92
- Fuel Wing Service	4.05	2.18
- Tenant Management	3.90	3.95
- Charge Setting/Income and Expenditure Planning	1.80	1.95
- Customer Service Improvement (1)	2.50	2.20
- Customer Service Improvement (2)		0.78
- Monitoring Evaluation (1)	3.45	2.25
- Monitoring Evaluation (2)		1.20
- Training in Japan	2.40	2.40
短期専門家(航空管制分野)	20.01	45.41
- ANS Chief Advisor/Pre-operation Planner	4.10	9.75
- ANS Sub-Chief Advisor/ATC Training Expert	3.62	8.47
- CNS Training Expert (1)	2.90	7.43
- CNS Training Expert (2)	1.50	4.53
- Flight Training Expert	1.97	5.47
- Flight Procedure Design Expert (1)	4.05	6.88
- Flight Procedure Design Expert (2)	0.80	1.63
- Procurement Supporter for FPD Training System	0.47	0.55
- Monitoring Expert	0.60	0.70
合計	157.96	212.51

c) 本邦研修

本邦研修の計画と実績を表1-1.2に示す。

表1-1.2 本邦研修

本邦研修	計画	実績
空港運営分野本邦研修	1,134 person days	1,053 person days
- Airport Management (Airport Planning/Organization/Human Resource)	8 persons, 14 days (1 time)	9 persons, 7 days
- Airport Operation (Ground Handling/Cargo)	6 persons, 7 days (2 times)	4 persons, 7 days 6 persons, 7 days
- Airport Management (Airport Facilities)	6 persons, 7 days (1 time)	5 persons, 7 days
- Operation and Maintenance of Airport Facilities	12 persons, 14 days (2 times)	12 persons, 14 days (2times) 7 persons, 9 days (2 times)
- Aviation Fuel Facility (Management)	2 persons, 14 days (1 time)	3 persons, 14 days
- Aviation Fuel Facility (Business Management)	4 persons, 14 days (1 time)	
- Aviation Fuel Facility (Operation and Maintenance)	4 persons, 14 days (2 times)	3 persons, 12 days (2 times)
- Aviation Fuel Facility (Wing Service)	3 persons, 14 days (2 times)	3 persons, 12 days
- Tenant Management/Charge Setting/ Income and Expenditure Planning	6 persons, 14 days (2 times)	6 persons, 14 days (2 times)
- Customer Satisfaction Improvement	4 persons, 14 days (2 times)	5 persons, 14 days (2 times)

航空管制分野本邦研修	70- 140 person days	232 person days
- Coordination between Airport and ANS, Planning of ANS Preparation, Ground Control with MLAT, Maintenance of ANS Facilities, Flight Inspection and Validation	10 persons, 7 - 14 days (1 time)	13 persons, 7 days (ANS Preparation) 4 persons, 14 days (Flight Inspection) 5 persons, 10 days (CNS) 5 persons, 7 days (ATC)
合計	1,204-1,274 person days	1,285 person days

d) 訓練機材

飛行方式設計研修用PC (2016年8月～2018年3月)

費用: 10.0 百万円

e) 現地活動費用

年	2014	2015	2016	2017	2018	2019	2020	2021	合計
費用 (百万円)	1.1	9.9	6.0	6.0	6.6	4.0	1.6	1.0	36.1

1-2 モンゴル側のインプット

a) カウンターパートの任命

2021年7月の新空港開港時点でのカウンターパートを以下に示す。

- プロジェクトディレクター、O&Mに係るSteering Committeeの委員長 (JCM議長)
- プロジェクトマネージャ、CAAM長官代理
- 空港移転対策本部
- モンゴル民間航空センター、CAAM
- NUBIA LLC (NUBIA運営会社)

本プロジェクトの開始当初、NUBIAの運営・維持管理の準備組織であるCAAMの供用準備組織(POA)がJICA専門家の知識と技術の移転のための主なカウンターパートであった。そして、NUBIAの運営会社であるNUBIA LLCが2019年7月に設立されて以降は、POAと旧国際空港のスタッフは徐々にNUBIA LCCに異動した。よって、NUBIA開港に向けた人材育成は、NUBIA LCCの社内研修として引き継がることとなった。

空港管制分野(ANS)については、プロジェクト開始当初はANS WGが組織され、同ANS WGとJICA専門家チームが協力しプロジェクトが進められた。しかし、2019年5月にANS WGはその目的が達成されたとして改組され、新たにJICA専門家チームとのコーディネータが任命され、JICA専門家は、このコーディネータを通じCAAMの支援を継続した。

一方、2020年2月、CAAMは、レギュレータ部門とオペレーター部門の分離を行うための組織改編が行われ、モンゴル民間航空センター(NCAC)がオペレーター部門として設立された。JICA専門家のカウンターパートも同NCACの管轄下の部門に置かれた。

b) プロジェクトオフィス

CAAMは、JICA専門家のためのプロジェクトオフィスと施設をCAAM本部とNUBIAに提供した。

c) 現地費用

CAAMは、JICA専門家のオフィススペースと施設に付随する費用を負担した。

1-3 活動

a) アウトプット1に関する活動（運営・維持管理組織の設立）

アウトプット1に関する活動は4つある。これらの全ての活動は、4年遅れで完了した。

	活動	計画	進捗率 (2017年1月) MS ver 2	進捗率 (2019年7月) MS ver 5	結果 (2021年8月) PCR
1-1	チンギスハーン国際空港の運営維持管理体制のレビュー	2015年3月末までに完了予定	100%	100%	100%
1-2	日本の空港の運営維持管理体制に関する説明・視察	2015年8月末までに完了予定	80%	100%	100%
1-3	NUBIAの人材配置を含む運営維持管理組織の設置に関するアクションプランの実行支援	2017年4月末までに完了予定	40%	70%	100%
1-4	空港運営に関する研修の実施	2017年7月末までに完了予定	0%	70%	100%

NUBIA LCCとモンゴル側のカウンターパートへのヒアリング結果によれば、運営・維持管理組織の設立は特段の問題なく完了した。

b) アウトプット2に関する活動（滑走路等の維持管理）

アウトプット2に関する活動は4つある。これらの全ての活動は、4年遅れで完了した。

	活動	計画	進捗率 (2017年1月) MS ver 2	進捗率 (2019年7月) MS ver 5	結果 (2021年8月) PCR
2-1	チンギスハーン国際空港の滑走路等の維持管理方法のレビュー	2015年3月末までに完了予定	80%	100%	100%
2-2	日本の空港の滑走路等の維持管理に関する説明・視察	2015年8月末までに完了予定	80%	100%	100%
2-3	滑走路等の維持管理に関するアクションプランの実行支援	2017年4月末までに完了予定	50%	85%	100%
2-4	滑走路等の維持管理に係る優先分野を対象にした研修の実施	2017年7月末までに完了予定	0%	100%	100%

NUBIA LCCへのヒアリング結果によれば、成田空港での本邦研修は、日本における滑走路や他の施設の維持管理方法を研修生が実践的に学ぶことができたため、非常に効果的であった。

c) アウトプット3に関する活動（給油システムの運用と維持管理）

アウトプット3に関する活動は4つある。これらの全ての活動は、4年遅れで完了した。

	活動	計画	進捗率 (2017年1月) MS ver 2	進捗率 (2019年7月) MS ver 5	結果 (2021年8月) PCR
3-1	チンギスハーン国際空港の給油システムの運営維持管理方法のレビュー	2015年3月末までに完了予定	100%	100%	100%
3-2	日本の空港の給油システムの運営維持管理に関する説明・視察	2015年8月末までに完了予定	50%	100%	100%

3-3	給油システムの運営維持管理に関するアクションプランの実行支援	2017年4月末までに完了予定	36%	87%	100%
3-4	給油システムの運営維持管理に係る優先分野を対象にした研修の実施	2017年7月末までに完了予定	0%	85%	100%

アウトプット3の活動は完了したが、給油システムの研修を受けた研修性のほとんどが NUBIA LCCに異動、もしくは退職したため、現状、本プロジェクトで給油システムの研修を受けた職員がほとんどいない状況にある。よって、給油システムの分野の人材の能力開発に向けた取り組みが急務となっている。

d) アウトプット4に関する活動（料金設定とテナント管理）

アウトプット4に関する活動は5つある。これらの全ての活動は、4年遅れで完了した。

活動	計画	進捗率 (2017年1月) MS ver 2	進捗率 (2019年7月) MS ver 5	結果 (2021年8月) PCR
4-1	チンギスハーン国際空港の運営に係る収益のレビュー	2015年3月末までに完了予定	100%	100%
4-2	日本の空港の料金設定方法、テナント運営に関する説明・視察	2015年8月末までに完了予定	100%	100%
4-3	料金設定に関するアクションプランの実行支援	2017年4月末までに完了予定	43%	80%
4-4	テナント運営に関するアクションプランの実行支援	2017年7月末までに完了予定	31%	100%
4-5	テナント運営に関する研修の実施	2017年7月末までに完了予定	0%	100%

アウトプットに関する活動は完了し、新国際空港の運営が開始されたが、COVID-19パンデミックの影響により、いくつかのテナントのショップやレストランはまだ開店していない状況にある。

e) アウトプット5に関する活動（顧客満足度向上）

アウトプット5に関する活動は4つある。これらの全ての活動は、4年遅れで完了した。

活動	計画	進捗率 (2017年1月) MS ver 2	進捗率 (2019年7月) MS ver 5	結果 (2021年8月) PCR
5-1	チンギスハーン国際空港における旅客サービスのレビュー	2015年3月末までに完了予定	100%	100%
5-2	日本の空港の顧客満足度向上(CS)活動に関する説明・視察	2015年8月末までに完了予定	100%	100%
5-3	顧客満足度向上(CS)に関するアクションプランの実行支援	2017年4月末までに完了予定	48%	84%
5-4	顧客満足度向上(CS)に関する研修の実施	2017年7月末までに完了予定	0%	100%

COVID-19パンデミックの影響により NUBIA開港時から国際便のフライト数が限られている。このため通常時と比較して顧客数が少なく、これまで特に問題は発生していない。

f) アウトプット6に関する活動（空港移転計画）

アウトプット6に関する活動は4つある。これらの全ての活動は、4年遅れで完了した。

活動		計画	進捗率 (2017年1月) MS ver 2	進捗率 (2019年7月) MS ver 5	結果 (2021年8月) PCR
6-1	NUBIAの供用準備状況のレビュー	2015年3月末までに完了予定	100%	100%	100%
6-2	日本の空港の移転準備作業に関する説明	2015年8月末までに完了予定	100%	100%	100%
6-3	空港移転に関するアクションプランの実行支援	2017年4月末までに完了予定	47%	47%	100%
6-4	関係者間の空港移転の一般的な調整	-	0%	0%	100%

NUBIA開港前日は国際便のフライトがなかったことから、実際の移転作業はスムーズに完了した。また、移転ワーキンググループの会合が8回開催され、移転の調整が効率的に行われた。

g) アウトプット7に関する活動（航空管制分野の能力開発と空港移転計画）

アウトプット7に関する活動は26ある。これらの全ての活動は、4年遅れで完了した。

活動		計画	進捗率 (2016年12月) MS ver 2	進捗率 (2019年6月) MS ver 6	結果 (2021年8月) PCR
7-1	供用準備計画				
7-1-1	供用準備計画（案）を作成する。	2016年6月末までに完了予定	100%	100%	100%
7-1-2	空港運営機関と航空管制機関の調整に係る日本の事例を理解する（現地研修および本邦研修）。	2016年7月末までに完了予定	50%	60%	100%
7-1-3	供用準備計画（案）を分析・改善する。	2016年10月末までに完了予定	100%	100%	100%
7-1-4	供用準備計画の進捗をモニタリングし、必要に応じて調整する。	2017年4月末までに完了予定	50%	50%	100%
7-2	開港日計画				
7-2-1	開港日計画を作成する	2017年4月末までに完了予定	0%	15%	100%
7-2-2	開港日計画の進捗をモニタリングし、必要に応じて調整する。	2017年4月末までに完了予定	0%	0%	100%
7-3	安全性評価				
7-3-1	非安全事象のリスクと発生頻度の評価を行う。	2017年4月末までに完了予定	50%	70%	100%
7-3-2	重要な安全事項について安全対策の検討を行う。	2017年4月末までに完了予定	50%	70%	100%
7-4	航空管制官の能力開発				
7-4-1	航空管制官の研修計画を作成する。	2016年7月末までに完了予定	50%	80%	100%
7-4-2	航空管制業務マニュアルを作成する。	2016年9月末までに完了予定	75%	75%	100%
7-4-3	航空管制業務マニュアルに係る研修を実施する。	2016年11月末までに完了予定	0%	80%	100%
7-4-4	シミュレータ研修およびテスト運用研修を実施する。	2017年4月末までに完了予定	0%	80%	100%
7-4-5	NUBIAにおける航空管制	2017年3月末まで	50%	100%	100%

	業務の資格要件を設定する。	に完了予定			
7-4-6	航空管制官に対する資格審査を実施する。	2017年4月末までに完了予定	50%	75%	100%
7-5	管制技術官の能力開発				
7-5-1	管制技術官の研修計画を策定する。	2016年7月末までに完了予定	50%	80%	100%
7-5-2	航空管制機材維持管理業務マニュアルを作成する。	2016年12月末までに完了予定	25%	70%	100%
7-5-3	航空管制機材維持管理業務マニュアルに係る研修を行う。	2017年2月末までに完了予定	50%	70%	100%
7-5-4	管制技術官の現地研修を実施する。	2017年4月末までに完了予定	0%	70%	100%
7-5-5	航空管制機材暫定維持管理業務マニュアルを作成する。	-	-	100%	100%
7-5-6	航空管制機材暫定維持管理業務マニュアルに基づきNUBIAにおいて暫定維持管理を実施する。	-	-	70%	100%
7-6	飛行検査の能力開発				
7-6-1	飛行検査業務マニュアルを作成する。	2016年10月末までに完了予定	75%	100%	100%
7-6-2	飛行検査官の現地訓練を実施する。	2017年4月末までに完了予定	25%	95%	100%
7-7	NUBIAにおける計器飛行方式の作成				
7-7-1	計器飛行方式の設計を行う。	2016年10月末までに完了予定	90%	100%	100%
7-7-2	地上検証を行う。	2016年11月末までに完了予定	75%	100%	100%
7-7-3	飛行検証を行う。	2016年12月末までに完了予定	0%	90%	100%
7-7-4	航空路誌掲載のために航空図を作成する。	2017年2月末までに完了予定	90%	90%	100%

2020年からのCOVID-19パンデミックにより、JICA専門家のモンゴルへの派遣が困難となったことから、JICA専門家は日本からカウンターパートとのWEB会議を定期的で開催し、準備状況や課題の収集・共有を行うなど、遠隔での支援を行った。また、緊急時対応訓練、RCAT作業、開港日運用(開港日の前後3日間)には、JICA専門家がNUBIAに現地スタッフを配置し、リアルタイムで現場作業をモニタリングしながら現地のカウンターパートに助言を行った。

2. プロジェクトの達成度

2-1 アウトプットと指標

- a) アウトプット1の達成度 (人材配置を含む運営維持管理組織計画が策定されるとともに、それを基に運営・維持管理組織が整備される。)

アウトプット1の全ての指標が達成されたことから、アウトプット1は本プロジェクト終了時点において達成された。

アウトプットの指標		達成度 (2017年1月) MS ver 2	達成度 (2019年7月) MS ver 5	結果 (2021年8月) PCR
1-1	カウンターパートの運営・維持管理組織の知識が向上する。	0%	0%	100%
1-2	NUBIAの運営・維持管理組織の規則、マニュアル等が準備される。	46%	100%	100%
1-3	NUBIAの組織図が準備される。	50%	50%	100%
1-4	スタッフが配置され割当を満たしている。	0%	0%	100%

- b) アウトプット2の達成度（滑走路等の維持管理計画が更新されるとともに、それを実施する人材が育成される）

アウトプット2の全ての指標が達成されたことから、アウトプット2は本プロジェクト終了時点において達成された。

アウトプットの指標		達成度 (2017年1月) MS ver 2	達成度 (2019年7月) MS ver 5	結果 (2021年8月) PCR
2-1	カウンターパートの滑走路等の維持管理の知識が向上する。	0%	0%	100%
2-2	NUBIAの滑走路等の維持管理の規則、マニュアル等が準備される。	36%	100%	100%
2-3	NUBIAの滑走路等の維持管理計画が文書化される。	0%	100%	100%
2-4	スタッフが滑走路等の維持管理について教育されている。	0%	0%	100%

- c) アウトプット3の達成度（給油システムの維持管理計画が策定されるとともに、それを実施する人材が育成される。）

アウトプット3の全ての指標が達成されたことから、アウトプット3は本プロジェクト終了時点において達成された。

アウトプットの指標		達成度 (2017年1月) MS ver 2	達成度 (2019年7月) MS ver 5	結果 (2021年8月) PCR
3-1	カウンターパートの給油システムの運営・維持管理の知識が向上する。	0%	0%	100%
3-2	NUBIAの給油システムの運営・維持管理の規則、マニュアル等が準備される。	36%	94%	100%
3-3	NUBIAの給油システムの運営・維持管理の運営・維持管理計画が文書化される。	0%	94%	100%
3-4	スタッフが給油システムの運営・維持管理について教育されている。	0%	0%	100%

- d) アウトプット4の達成度（適切な料金の設定方法が設定されるとともに、テナント運営を担う人材が育成される。）

アウトプット4の全ての指標が達成されたことから、アウトプット4は本プロジェクト終了時点において達成された。

アウトプットの指標		達成度 (2017年1月) MS ver 2	達成度 (2019年7月) MS ver 5	結果 (2021年8月) PCR
4-1	カウンターパートの料金設定方式とテナント管理の知識が向上する。	0%	0%	100%

4-2	NUBIAに適切な料金システムが導入される。	43%	43%	100%
4-3	NUBIAのテナント管理の規則、マニュアル等が準備される。	31%	70%	100%

- e) アウトプット5の達成度（顧客満足度向上(CS)のための活動計画が策定されるとともに、それを実施する人材が育成される。）

アウトプット5の全ての指標が達成されたことから、アウトプット5は本プロジェクト終了時点において達成された。

アウトプットの指標		達成度 (2017年1月) MS ver 2	達成度 (2019年7月) MS ver 5	結果 (2021年8月) PCR
5-1	カウンターパートのCSの知識が向上する。	0%	100%	100%
5-2	NUBIAの顧客満足度(CS)向上の規則、マニュアル、活動が準備される。	48%	48%	100%
5-3	スタッフがCS向上について教育されている。	0%	0%	100%

- f) アウトプット6の達成度（移転基本計画が策定されるとともに、それを実施する人材が育成される。）

アウトプット6の全ての指標が達成されたことから、アウトプット6は本プロジェクト終了時点において達成された。

アウトプットの指標		達成度 (2017年1月) MS ver 2	達成度 (2019年7月) MS ver 5	結果 (2021年8月) PCR
6-1	カウンターパートは、空港移転の準備に必要な活動についての理解を深める。	0%	0%	100%
6-2	空港移転のためにスタッフや他の必要な人材が適切に割当てられている。	0%	0%	100%

- g) アウトプット7の達成度（NUBIAにおいて航空管制業務を実施するために、モンゴル民間航空庁(CAAM)の能力開発が行われる。）

アウトプット7の全ての指標が達成されたことから、アウトプット7は本プロジェクト終了時点において達成された。

アウトプットの指標		進捗率 (2016年12月) MS ver 2	進捗率 (2019年6月) MS ver 6	結果 (2021年8月) PCR
7-1	供用準備計画が作成、実施され、モニタリングされている。	75%	75%	100%
7-2	開港日準備計画が作成、実施され、モニタリングされている。	0%	15%	100%
7-3	安全性評価が完了している。	50%	70%	100%
7-4	少なくとも32名の管制官がNUBIAでの管制資格を取得する。	0%	50%	100%
7-5	少なくとも25名の管制技術官が管制機材の維持管理業務を実施できる。	50%	90%	100%
7-6	少なくとも6名の飛行検査官が計器飛行方式の飛行検査を実施できる。	75%	95%	100%
7-7	従来型計器飛行方式が航空路誌(AIP)に公示されている。	75%	95%	100%
7-8	性能準拠型(PBN)計器飛行方式がAIPに公示されている。	75%	85%	100%

2-2 プロジェクト目標と指標

本プロジェクトのプロジェクト目標は、「NUBIAの円滑な供用に資するため、運営・維持管理体制及び能力が強化される。」であるが、以下に示すとおり、7つの全て指標が達成されたことから、本プロジェクト目標は達成された。

プロジェクトの指標		プロジェクト終了時の評価
1	NUBIAにおける運営・維持管理組織計画に基づき、運営・維持管理体制が機能している。	全て達成：運営・維持管理組織であるNUBIA LLCによって、NUBIAの運営が2021年7月4日に開始された。
2	NUBIAの滑走路等の更新された維持管理計画に基づき、維持管理ができる状態になる。	全て達成：滑走路等の維持管理などの準備作業は完了し、NUBIAの運営が2021年7月4日に開始された。
3	NUBIAの給油システムの運営・維持管理計画に基づき、運営・維持管理ができる状態になる。	全て達成：給油分野の準備作業は完了し、NUBIAの運営が2021年7月4日に開始された。
4	NUBIAにおける適切な料金体系が整備されるとともに、テナント運営計画に基づきテナント運営ができる状態になる。	全て達成：テナントマネジメント分野の準備作業は完了し、NUBIAの運営が2021年7月4日に開始された。
5	NUBIAにおける顧客満足度向上（CS）のための活動計画に基づき、顧客満足度向上（CS）活動ができる状態になる。	全て達成：顧客満足度（CS）向上の分野の準備作業は完了し、NUBIAの運営が2021年7月4日に開始された。
6	NUBIAへの移転準備が整う。	全て達成NUBIAへの空港移転の準備作業は完了し、空港移転は2021年7月4日に実施された。
7	NUBIAにおける航空管制業務に係る供用準備が、供用準備計画に基づいて実施、完了している。	全て達成：NUBIAの航空管制サービスの準備作業は完了し、NUBIAの運営が2021年7月4日に開始された。

3. PDM改訂履歴

本プロジェクトのPDMは、プロジェクト完了までに6回の修正が行われた。修正の概要を以下に示す。

改定	PDMの修正とR/Dの改定
第1回R/D改定 (2016年4月22日)	<ul style="list-style-type: none"> NUBIAにおける航空管制分野の供用準備のための能力開発に関連するアウトプットと活動が追加された。 NUBIAにおける航空管制分野の供用準備のための能力開発の追加に対応して、日本側のインプット(日本の専門家、本邦研修と機材)が追加された。 NUBIAにおける航空管制分野の供用準備のための能力開発の追加に対応して、モンゴル側のインプット(カウンターパート、機材)が追加された。 NUBIAにおける航空管制分野の供用準備のための能力開発の追加に対応して、プロジェクト目標とアウトプットの指標が追加された。 空港運営の能力開発に関連する活動の記載の見直しが行われた。
第2回R/D改定 (2017年4月7日)	<ul style="list-style-type: none"> モンゴル側の実施体制が更新された。 NUBIA開港遅延に伴いプロジェクト期間が32ヶ月から42ヶ月へ延長された。(2018年7月まで) CNSの暫定維持管理の活動が追加された。 航空管制分野の本邦研修に関する詳細が追加された。
第3回R/D改定 (2018年6月5日)	<ul style="list-style-type: none"> NUBIA開港遅延に伴いプロジェクト期間が42ヶ月から54ヶ月へ延長された。(2019年7月まで) 空港移転の調整全般に関する活動が追加された。 モンゴル側インプットのモンゴル側が導入するATCシミュレータを利用した訓練が海外でのATCシミュレータ訓練に変更された。 NUBIA運営会社と給油オペレーターがモンゴル側のインプットとして追加された。

第4回R/D改定 (2019年7月9日)	• NUBIA開港遅延に伴いプロジェクト期間が54ヶ月から68ヶ月へ延長された。 (2020年9月まで)
第5回R/D改定 (2020年8月24日)	• NUBIA開港遅延に伴いプロジェクト期間が68ヶ月から71ヶ月へ延長された。 (2020年12月まで)
第6回R/D改定 (2020年12月23日)	• NUBIA開港遅延に伴いプロジェクト期間が71ヶ月から80ヶ月へ延長された。 (2021年9月まで)

III. 合同評価の結果

1. 開発援助委員会 (DAC) の評価項目に基づくレビュー結果

1-1 妥当性

本プロジェクトの妥当性は高い。

- 本プロジェクトの目標は、「NUBIAの円滑な供用に資するため、運営・維持管理体制および能力が強化される。」である。このプロジェクト目標は、民間航空分野での人材育成の重要性を強調する 2020 年を目標としたモンゴルの民間航空の国家政策と一致しており、同政策は本プロジェクト期間中維持された。
- 本プロジェクト目標は、JICAの協力量針である「バランスのよい経済開発」、「経済成長を支える高品質なインフラ」に合致する。
- 本プロジェクト目標は、適切な人材を擁する運営・維持管理組織によって NUBIA が運営される必要性に沿ったものである。
- NUBIAの施設は JICAの円借款により建設された。その空港運営の人材育成に協力することは、NUBIAの施設建設との相乗効果を発現するものであり適切である。

1-2 有効性(プロジェクト目標の達成度)

本プロジェクトの有効性は高い。

- 本プロジェクトの7つのアウトプットは、それらに関連する全ての指標がプロジェクトの完了までに達成された。
- アウトプットの達成は、本プロジェクト目標の達成に強い関連性がある。
- 本プロジェクト目標は、それらに関連する7つ指標全てがプロジェクトの完了までに達成された。

1-3 効率性

本プロジェクトの効率性は低い。

- NUBIAの開港は、空港施設建設の遅延、NUBIA運営会社設立遅延、COVID-19の感染拡大の影響により約4年遅れた。その結果、本プロジェクトの期間は当初32ヶ月から80ヶ月に延長された。
- 空港施設建設の遅延、NUBIA運営会社設立遅延、COVID-19の感染拡大の影響により、JICAの本プロジェクトの費用は、当初予算の350百万円から589百万円へと大きく増加した。

1-4 インパクト

本プロジェクトのインパクトは、高いと期待できる。

- 本プロジェクトの上位目標は、「モンゴル国の首都ウランバートルのゲートウェイ機

能強化され、航空旅客増加への対応が可能となる。」である。この上位目標は、部分的に既に達成されており、数年以内に完全に達成されるものと期待できる。

- 本プロジェクトのプロジェクト目標の達成と上位目標の達成に強い関連性がある。
- NUBIAの開発と運営は、投資、貿易、観光開発を通じてモンゴルの経済発展を促進する。

1-5 自立発展性

本プロジェクトの自立発展性は、高いと期待できる。

[政策]

- NUBIAの持続可能な運営は、民間航空に関する国家政策の優先事項として維持される。

[組織]

- NUBIA LLCは、日本式のマネジメントによりNUBIAを持続的に運営するために、適切に組織されている。
- CAAMの航空管制サービス部門は、NUBIAにおける航空管制サービスを持続的に提供するために適切に組織されている。
- CAAMのグランドハンドリング部門と給油サービス部門は、NUBIAにおける給油サービスを持続的に提供するために適切に組織されている。

[能力]

- NUBIA LLCは、NUBIAの持続的な運営のための技術的な能力を有する。
- CAAMの航空管制サービス部門は、NUBIAにおける航空管制サービスを持続的に提供するための技術的な能力を有する。
- CAAMのグランドハンドリング部門と給油サービス部門は、スタッフの継続的な教育を行うことで、NUBIAにおける給油サービスを持続的に提供するための技術的な能力を有する。

[財政]

- NUBIA LCCは、ユーザー課金による商業的な管理により財政的に持続可能である。但し、COVID-19の感染拡大が全世界において航空業界に悪影響を及ぼしているため、長期的なこの悪影響をカバーするための何らかの策を応じる必要がある。
- NUBIAにおける航空管制サービス及び給油サービスは、ユーザーから利用料を徴収し各サービスの提供を行っているため財政的に持続可能である。

2. プロジェクトの実施や成果に影響を与えた要素

2-1 好ましい影響

a) 実務経験者の短期専門家としての動員

本プロジェクトでは、グランドハンドリングサービス、テナント管理、給油システム、顧客サービスなどの技術分野の経験豊富な実務者を短期専門家として現地に派遣した。多くのカウンターパートが「専門家はどんな質問にも答えてくれる。」と専門家の実務知識の深さを評価していた。

b) 本プロジェクトへのNUBIAの航空管制分野の能力開発の追加

本プロジェクトのNUBIAの航空管制分野の能力開発は、2016年4月22日付け第1回R/D改定によって追加された。この追加によって、航空管制分野の供用準備作業及び、航空管制機能の旧ウランバートル国際空港からNUBIAへの移転作業は、効率的かつ円滑に実施された。

c) CAAMによる空港移転調整への積極的な関与

COVID-19パンデミックのため、2020年4月以降、JICAは空港移転の専門家を派遣することができなかったが、CAAMは移転対策本部を設立し、空港機能の円滑な移転のための各種ステークホルダーとの調整を丁寧に行なった。さらに、CAAMの航空管制分野のカウンターパートは、移転プロセスが円滑に行われるよう、日本のJICA専門家チームとオンライン会議を積極的に実施し調整を行った。

2-2 好ましくない影響

a) POAスタッフの配置遅延及び空港業務の経験が浅いPOAスタッフの配置

2015年末時点において、JICA専門家が技術移転を行うことができたPOAスタッフの配置はわずか13名であり、到底十分ではなかった。さらに、POAとして配置されたスタッフの中には、空港運用業務の経験者が非常に少なかったため、JICA専門家からの技術移転がより困難であった。

b) 不安定なスタッフ配置

本プロジェクト期間中、カウンターパートのメンバーが何回も代わり、カウンターパートと日本の専門家との調整が困難となることがあった。また、何人かのスタッフは本プロジェクトの研修後に退職することがあった。このような不安定なスタッフ要員の配置は、JICA専門家の技術移転をより困難なものとした。

c) 建設工事の遅延

空港施設の建設、特にモンゴル側負担事項であった管理棟、メンテナンス棟、カーゴターミナル、ハンガー及びケータリング施設の建設に著しい遅延があった。これらの施設の完工時期が曖昧であったためNUBIA開港時期の見通しが立たず、プロジェクト活動の進捗に影響を与えることとなった。

d) NUBIA運営会社設立の遅延

NUBIA運営会社の設立に関し、日本企業コンソーシアムの提案から、提案の評価、コンセッション契約の交渉／署名に至るまでに3年以上を要した。運営会社決定プロセスの遅延がNUBIA開港を遅らせ、本プロジェクト期間の延長の原因となった。

e) COVID-19パンデミック

2020年初頭からのCOVID-19パンデミックにより、NUBIA開港がさらに1年遅れ、2021年7月となった。それに伴い本プロジェクトの期間も延長され、結果的にさらに本プロジェクトの効率性を低下させた。

3. プロジェクトリスク管理の実績評価

好ましくない影響に対して取られた措置は以下のとおりである。

a) POAスタッフの配置遅延と経験の浅いPOAスタッフの配置

モンゴル側は、旧ウランバートル国際空港からの職員を含め、2018年中頃までにPOAスタッフの人員を55名に強化した。

b) 不安定なスタッフ要員の配置

JICAは、本プロジェクトを円滑に実施するために、モンゴル側及びNUBIA LCCと密接なコ

コミュニケーションを図る会合を設定した。

c) 建設工事の遅延

モンゴル側は、管理棟、メンテナンス棟、カーゴターミナルの建設について、2018年末までの完成を目指して工事を加速させた。しかし、ハンガーとケータリング施設の建設については、COVID-19パンデミックにより2021年までずれ込む結果となった。

d) NUBIA 運営会社設立の遅延

モンゴル側とNUBIA LLCは、早期開港を目指し、2019年9月のコンセッション契約の成立から10ヶ月以内にNUBIAを開港することについて合意した。

f) COVID-19パンデミック

COVID-19パンデミックは、本プロジェクトとしての対応は不可能であったが、モンゴル側はNUBIA開港の遅延を1年の最小限に抑え、2021年7月4日のNUBIA開港に向けて旧ウランバートル国際空港からの空港機能の移転に最善を尽くした。

4. 教訓

- a) プロジェクト期間が当初より5回延長されたことから、本プロジェクトの効率性は低いものとなった。新空港供用に向けた能力開発プロジェクトについては、プロジェクトの効率的な実施のために、新空港の開港予定日が確定してから開始することが望ましい。
- b) 空港移転調整のために、CAAM、NUBIA LLC、JICA間での週例会議や、在モンゴル日本大使館、NUBIA LLC、JICA間の月例会議など多くの定例会議が開催された。これらのステークホルダー間における密接なコミュニケーションは、円滑な空港移転に貢献した。
- c) スタッフの移転と配置は、空港移転に伴う重要な課題である。航空業界で求められるスキルは特有のものであり、また、航空業界は他の業界に比べ多様なステークホルダーがいるため、能力開発プロジェクトだけではなく、空港の移転に対してもスタッフの移転と配置を事前に計画することが望ましい。

IV. プロジェクト完了後の上位目標の達成に向けての提言

1. 上位目標を達成するための展望

本プロジェクトの上位目標は、「モンゴル国の首都ウランバートルのゲートウェイ機能が強化され、航空旅客増加への対応が可能となる。」である。この上位目標の達成度を評価するために2つの指標が設定されている。これらの指標達成に係る展望を以下に示す。

	上位目標の指標	プロジェクト完了時の見込み
1	年間旅客数約200万人対応の空港処理能力が確保されている。	NUBIAは年間200万人以上の乗客に対応できるよう開発された。この指標はすでに達成されている。
2	NUBIAを利用する航空会社等ステークホルダーの利便性が向上する。	この指標は、NUBIAにおける航空旅客需要がCovid-19パンデミック以前のレベルに回復してから数年後に達成されると予想されている。

2. 上位目標を達成するためのモンゴル側の活動計画・実施体制

- a) NUBIA LLCは、モンゴル政府と15年間のコンセッション契約を締結し、本プロジェクトの上位目標を達成するためにNUBIAの運営と維持管理を継続することになっている。

3. モンゴル側への提言

- a) モンゴル政府とNUBIA LCCは、NUBIAの持続可能な運営と維持管理のためにコンセッション契約を維持し、それを遵守すべきである。
- b) 国際線のフライト数を増加させるため、モンゴル政府は、航空業界で公正かつ自由な競争が行われるための「オープンスカイ政策ポリシー」を推進することが望ましい。

附属書 1: プロジェクトの結果

1. 派遣専門家のリスト

派遣専門家のリストを以下に示す。

担当業務/技術分野	氏名	所属
長期専門家		
- Chief Advisor	Masatomo KIHARA	MLIT
- Airport Relocation/Project Coordinator	Kishiro HIRANO	JICA
- Project Coordinator	Satoshi IJIMA Mitsuo TAKAMURA	JICA JICA
短期専門家 (空港運営)		
- Project Manager/Airport Relocation/ Civil Engineer/Snow Removal (1)	Norifumi YOSHIDA	NAA
- Deputy Project Manager/Terminal Facilities/Communication Facilities (1)/Information Technology (1)	Akio TAKAYASU	NAA
- Ground Handling Service/Cargo (1)	Yuzuru SHIZUNO	JALUX
- Cargo (1)	Fujio SHIBASAKI	JALUX
- Security (1)	Atsushi OHIRA	NAA
- Airport Operation/Safety (1)	Akira YAEGASHI	NAA
- Airport Planning/Organization/Human Resource	Hideo KANAYA	NAA
- Civil Engineer/Snow Removal (2)	Katsuyoshi KOSAKU	NAA
- Special Equipment (1)	Takuya MIZUTA	NAA
- Special Equipment (2)	Hisato INAGAKI	NAA
- Machinery Facilities (1)	Harutaka FUJIHIRA	NAA
- Machinery Facilities (2)	Toshiyuki NAKAJIMA	NAA
- Electrical Equipment (1)	Kenichi FUSE	NAA
- Electrical Equipment (2)	Kazuo HARA	NAA
- Communication Facilities (2)	Makoto HONDA	NAA
- Information Technology (2)	Mitsuhiro NAKAJIMA	NAA
- Fuel Supervision (Safety Management)	Akihiro KIKUCHI	NAA
- Fuel Business Management		
- Fuel Facility Management	Toshiya UNOZAWA	NAA
- Fuel Operations and Maintenance	Kazuhiro AKIMOTO	NAA
- Fuel Wing Service	Yoshiaki KURODA	NAA
- Tenant Management	Ryo TAKEI	JAT
- Charge Setting/Income and Expenditure Planning	Kenichi ONE	NAA
- Customer Service Improvement (1)	Yasuhiro ASO	NAA
- Customer Service Improvement (2)	Nozomi AMEMIA	NAA
- Monitoring Evaluation (1)	Akira AKASAKA	NAA
- Monitoring Evaluation (2)	Hideo SATAMOTO	NAA
短期専門家 (空港管制分野)		
- ANS Chief Advisor/Pre-operation Planner	Yukio HASEBE	JRANSA
- ANS Sub-Chief Advisor/ATC Training Expert	Hideo WATANABE	ATCAJ
- CNS Training Expert (1)	Jiro HARADA	JRANSA
- CNS Training Expert (2)	Mamoru YAMADA	JRANSA
- Flight Training Expert	Norio MURAI	JRANSA
- Flight Procedure Design Expert (1)	Shinji HARA	ATCAJ
- Flight Procedure Design Expert (2)	Naoki SAKAMOTO	ATCAJ
- Procurement Supporter for FPD Training System	Satoko TSUNODA	JRANSA
- Monitoring Expert	Teruhiro HISATOMI	JRANSA
合計	39	-

2. カウンターパートのリスト

カウンターパートの組織のリストを以下に示す。

- Ministry of Road and Transportation (MRT)
- Ministry of Road and Transport Development (MRTD)
- Civil Aviation Authority of Mongolia (CAAM)
- National Civil Aviation Center, CAAM
 - Airport Services Department, CAAM
 - Pre-Operation Unit (POU)
 - Pre-Operation Division (POD)
 - Pre-Operation Administration (POA)
 - Chinggis Khaan International Airport (CKIA)
 - Project Implementation Unit (PIU)
 - Relocation Countermeasure Headquarters
 - Air Navigation Services Department
 - Air Traffic Control (ATC) Services
 - Aeronautical Information Services (AIS)
 - Communications, Navigation & Surveillance (CNS) Services
 - Flight Procedure Design Services (FPDS)
 - ANS Pre-Operation Working Group
 - Ground Handling and Fuel Supply Services
- NUBIA LLC (NUBIA 運営会社)

3. 本邦研修のリスト

本邦研修のリストを以下に示す。

研修	内容
空港運営研修	
- Airport Management (Airport Planning/Organization/Human Resource)	<ul style="list-style-type: none"> • Management system and airport management & operation system in Japan • System design for outsourcing • Method of making contract documents and the flow of contract procedures, etc.
- Airport Operation (Ground Handling/Cargo)	<ul style="list-style-type: none"> • Ground Handling Service and Service Facilities at Narita Airport • Outline of IATA Standard for Ground Handling Agreement • Case study of Ground Handling Service & Cargo Operation by Japanese companies, etc.
- Airport Management (Airport Facilities)	<ul style="list-style-type: none"> • Airport management and control technology in Japan • Passenger terminal building management at Haneda Airport • Management and operation of Narita airport and preparation schedule of airport opening, etc.
- Operation and Maintenance of Airport Facilities (1)	<ul style="list-style-type: none"> • Airport management and airport facility maintenance method • Case Study of airport management by Japanese companies • The need for comprehensive preparation work with the schedule of airport opening, etc.
- Operation and Maintenance of Airport Facilities (2)	<ul style="list-style-type: none"> • Airport management and airport facility maintenance method • Airport operation preparation schedule at Narita Airport • Case Study of airport management by Japanese companies • Functions of airport operation information center and

	emergency response room, etc.
- Operation and Maintenance of Airport Facilities (Inline Screening System and Aerodrome Facilities)	<ul style="list-style-type: none"> • Inline screening System which to be introduced for the first time in Mongolia • Repairing method of concrete pavement, by learning examples of Narita Airport
- Operation and Maintenance of Airport Facilities (Operation Monitoring and Aerodrome Facilities)	<ul style="list-style-type: none"> • Operation monitoring service which to be introduced for the first time in Mongolia • Repairing method of concrete pavement, by learning examples of Narita Airport
- Aviation Fuel Facility (Management)	<ul style="list-style-type: none"> • Refueling facility overview, basic requirement, fuel supply system in Narita Airport • Basic knowledge concerning refueling business • Facility management and maintenance method, etc.
- Aviation Fuel Facility (Business Management)	
- Aviation Fuel Facility (Operation and Maintenance) (Maintenance)	<ul style="list-style-type: none"> • Quality Control • Maintenance of Tank, Hydrant, etc. (other fuel facilities)
- Aviation Fuel Facility (Operation and Maintenance) (DCS)	<ul style="list-style-type: none"> • Operation of DCS • Inventory Control & Fuel Supply Planning
- Aviation Fuel Facility (Wing Service)	<ul style="list-style-type: none"> • Wing Service Operation • Maintenance of Dispenser
- Tenant Management/Charge Setting/Income and Expenditure Planning (1)	<ul style="list-style-type: none"> • Management of tenants and overview of duty-free shops at Haneda Airport • Case study of commercial facility development at Haneda Airport • Charge setting, collection method and concept of income & expenditure planning at Narita Airport • Financial planning and property management of Narita Airport etc.
- Tenant Management/Charge Setting/Income and Expenditure Planning (2)	<ul style="list-style-type: none"> • Management of tenants and overview of duty-free shops at Haneda Airport & Narita Airport • Case study of commercial facility development at Haneda Airport & Narita Airport • Charge setting, collection method and concept of income & expenditure planning at Narita Airport • Financial planning and property management of Narita Airport etc.
- Customer Satisfaction Improvement (1)	<ul style="list-style-type: none"> • CS Promotion Organization and educational activities of Narita Airport • Overview and Airport Service of New Chitose Airport • CS activities and development of attractive commercial facilities in Haneda Airport • Approach to improve access to the airport etc.
- Customer Satisfaction Improvement (2)	<ul style="list-style-type: none"> • CS Promotion Organization and educational activities of Narita Airport & Chubu Airport • Overview and Airport Service of Chubu Airport & New Chitose Airport • CS activities and development of attractive commercial facilities in Narita Airport • Approach to improve access to the airport etc.
航空管制分野研修	
- ANS Preparation	<ol style="list-style-type: none"> 1. Ministry of Land, Infrastructure and Transport <ul style="list-style-type: none"> - Outline of air traffic control operations in Japan - Maintenance and operation management of radio facilities - Maintenance and operation management of aviation lights and electric facilities 2. Narita Airport Office <ul style="list-style-type: none"> - Agreement between the country concerning air traffic control and the company etc., and airport control overview - Agreement between the country and the company concerning the operation of air traffic control equipment, operation and maintenance of air traffic control equipment such as MLAT

	<ol style="list-style-type: none"> 3. Narita International Airport Co., Ltd. <ul style="list-style-type: none"> - Airport operation service, operation management work (arrangement with aviation station (limited to lamp control), and mechanism of information exchange) - Operation and maintenance work of ILS etc. and matters concerning radio facilities etc. - Matters concerning airfield lighting system and operations/spare parts management of airfield lighting system 4. Chubu Airport Office <ul style="list-style-type: none"> - Preparation work related to operation and maintenance of air traffic control equipment and start of service of Chubu Airport - Agreement with the Chubu Airport concerning air traffic control · Agreement, Training plans etc. related to the start of the operation of Chubu Airport 5. Chubu International Airport Co., Ltd. <ul style="list-style-type: none"> - Responsibility sharing and cooperation system between Aviation Bureau and Chubu International Airport Co., Ltd. - Outline of operations of Chubu International Airport Co. Ltd. 6. Fukuoka Air Traffic Control Department <ul style="list-style-type: none"> - Outline of air route control work related to Fukuoka FIR - Operation and maintenance of air traffic control equipment (related to air traffic control) 7. Air Traffic Management Center (ATMC) <ul style="list-style-type: none"> - Air traffic flow management, airspace management, offshore management operations - Operation and maintenance of air traffic control equipment (related to air traffic management)
<ul style="list-style-type: none"> - Flight Inspection 	<ol style="list-style-type: none"> 1. Ministry of Land, Infrastructure and Transport <ul style="list-style-type: none"> - The overview of Air Navigation Services in the Civil Aviation Bureau of Japan - Flight Inspection Services in Japan 2. Aeronautical Information Center <ul style="list-style-type: none"> - AIS management, process of AIP publication 3. Flight Inspection Center <ul style="list-style-type: none"> - Outline of Flight Inspection work - Outline of flight Inspection aircraft and inspection equipment - Outline of Flight Verification work - Process of determining flight procedure - Validation of PBN (Flight verification standards / instructions) - Nav Database for verification (Outline, Process) - Flight verification by VSIM - Flight inspection by PBN method - Inspection aircraft pre-boarding briefing - Boarding Flight Inspection aircraft - Flight Validation review - Portable Flight Inspection system - Management of Flight Inspection / verification results - Calibration of inspection system (GSE) - Training Summary, Award certificate
<ul style="list-style-type: none"> - CNS 	<ol style="list-style-type: none"> 1. Ministry of Land, Infrastructure and Transport <ul style="list-style-type: none"> - Outline of Air Navigation Services in Japan - Explanation of Training Scheme of CNS ATSEP persons - Briefly discussion for AFL services

	<ol style="list-style-type: none"> 2. Haneda Airport Office <ul style="list-style-type: none"> - Overview of CNS Facilities in Haneda Airport - Managements of CNS spare parts (APPS system) - Maintenance Training method of D-VOR (DVOR-07A) - Study tour for IFR, VFR and Airfield CNS 3. IWANUMA ASC (Aeronautical Safety Collage) Training Center <ul style="list-style-type: none"> - Obstacle Search Principle and Example (DVOR) - Introduction of past difficult Failure of VOR - ILS Maintenance and Flight Inspection - ILS Failure Cases Study - Method of ILS Operation Category III 4. Narita International Airport Co., Ltd <ul style="list-style-type: none"> - Outline of Narita Airport CNS/AFL Facilities - Study tour of Supervising System for NAA CNS/AFL - Observing of Mid-Night activities for AFL service 5. TOKYO ACC. <ul style="list-style-type: none"> - Outline of operations of Tokyo ACC - Study tour for ACC operation and CNS/Electric activities 6. Technical Management Center (TMC) <ul style="list-style-type: none"> - Outline of TMC - Study tour of Evaluation System for CNS Technical Management - Obstacle information and Safety information Sharing - Management of CNS Spare Parts (APPS system)
<p>- ATC</p>	<ol style="list-style-type: none"> 1. Ministry of Land, Infrastructure and Transport <ul style="list-style-type: none"> - The overview of Air Navigation Services in the Civil Aviation Bureau of Japan - ATC Training in Japan 2. Chubu International Airport <ul style="list-style-type: none"> - Air traffic control in Chubu International Airport - Training program and assessment - Non Radar ATC operations - ATCO Training Transfer to New AIRPORT from RJNN to RJGG - Observation of tower simulator - How to make a ground scale model set for training 3. Chubu International Airport Co., Ltd. <ul style="list-style-type: none"> - Airport operation at Centrair

4. 活動計画表 (PO) の改訂

4-1 PO ver. 1 (26 September 2014)

Plan of Operation (PO) (draft)

Annex 2

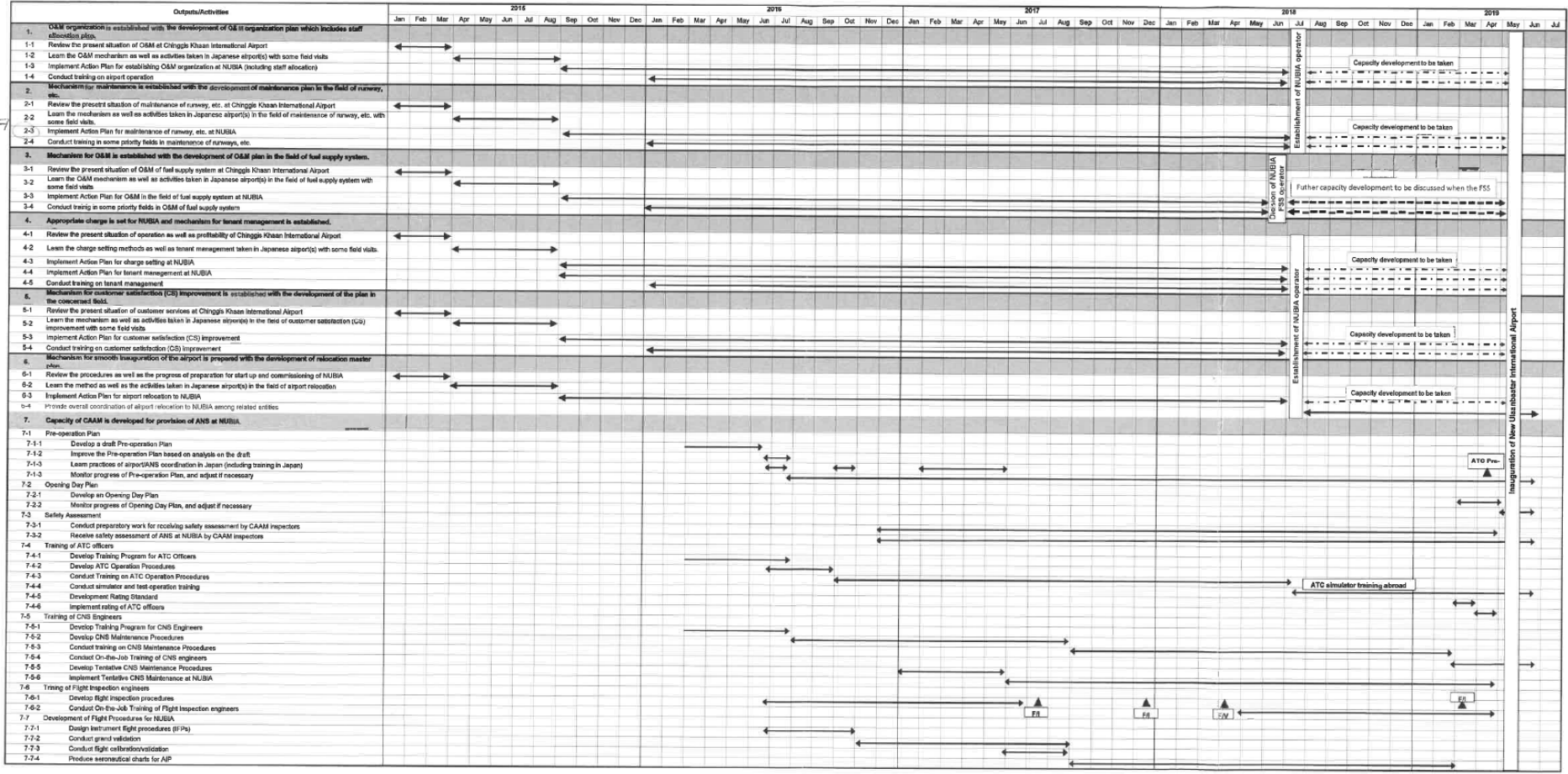
Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport

Schedule	1st Year												2nd Year												3rd Year																	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9									
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9							
	2014												2015												2016									2017								
1. O&M organization is established with the development of O&M organization plan which includes staff allocation plan																																										
1-1 Review the present situation of O&M at Chinggis Khaan International Airport	←→																																									
1-2 Explain the O&M mechanism as well as activities taken in Japanese airport(s) with some field visits	←→												Completion of F/S												Establishment of SPC																	
1-3 Support the implementation of Action Plan for establishing O&M organization at NUBIA (including staff allocation)													←→												←→									←→								
1-4 Provide training on airport operation																									←→									←→								
2. Mechanism for maintenance is established with the development of maintenance plan in the field of runway, etc.																																										
2-1 Review the present situation of maintenance of runway, etc. at Chinggis Khaan International Airport	←→																																									
2-2 Explain the mechanism as well as activities taken in Japanese airport(s) in the field of maintenance of runway, etc. with some field visits	←→																								Completion of paving work									Completion of paving work								
2-3 Support the implementation of Action Plan for maintenance of runway, etc. at NUBIA													←→												←→									←→								
2-4 Provide training in some priority fields in maintenance of runways, etc.																									←→									←→								
3. Mechanism for O&M is established with the development of O&M plan in the field of fuel supply system.																																										
3-1 Review the present situation of O&M of fuel supply system at Chinggis Khaan International Airport	←→																																									
3-2 Explain the O&M mechanism as well as activities taken in Japanese airport(s) in the field of fuel supply system with some field visits	←→																																									
3-3 Support the implementation of Action Plan for O&M in the field of fuel supply system at NUBIA													←→												←→									←→								
3-4 Provide training in some priority fields in O&M of fuel supply system																									←→									←→								
4. Appropriate charge is set for NUBIA and mechanism for tenant management is established.																																										
4-1 Review the present situation of operation as well as profitability of Chinggis Khaan International Airport	←→																																									
4-2 Explain the charge setting methods as well as tenant management taken in Japanese airport(s) with some field visits.	←→																																									
4-3 Support the implementation of Action Plan for charge setting at NUBIA													←→												←→									←→								
4-4 Support the implementation of Action Plan for tenant management at NUBIA													←→												←→									←→								
4-5 Provide training on tenant management																									←→									←→								
5. Mechanism for customer satisfaction (CS) improvement is established with the development of the plan in the concerned field.																																										
5-1 Review the present situation of customer services at Chinggis Khaan International Airport	←→																																									
5-2 Explain the mechanism as well as activities taken in Japanese airport(s) in the field of customer satisfaction (CS) improvement with some field visits	←→																																									
5-3 Support the implementation of Action Plan for customer satisfaction (CS) improvement													←→												←→									←→								
5-4 Provide training on customer satisfaction (CS) improvement																									←→									←→								
6. Mechanism for smooth inauguration of the airport is prepared with the development of relocation master plan.																																										
6-1 Review the procedures as well as the progress of preparation for start up and commissioning of NUBIA	←→																																									
6-2 Explain the method as well as the activities taken in Japanese airport(s) in the field of airport relocation	←→																																									
6-3 Support the implementation of Action Plan for airport relocation to NUBIA													←→												←→									←→								
Administrative Activities																																										
Hold the JCM meetings	N												N												N									N								
Make decision on Detailed Plan	N												N												N									N								
Submit the Inception Report	N												N												N									N								
Make a report of the Project completion	N												N												N									N								
Submit the monitoring sheets	N												N												N									N								
Make joint reviews on the results of the monitoring	N												N												N									N								

4-6 PO ver. 4 (5 June 2018)

Annex2: Plan of Operation (PO) (3rd Amended) ; Latest case (opening in May 2019)
 Project for Human Resource Development and O&M Capacity Development for New Usarabat International Airport (NUBIA)
 Implementing Entity: Ministry of Roads and Transport Development (MRTD)

Project Implementation Period: 28/12/2015-27/07/2019 (54 months)



Annex 1 - 13

2

4-7 PO (Monitoring Sheet (Airport) Ver.5) (26 July 2019)

Project Monitoring Sheet II (Revision of Plan of Operation)

Legend : Plan (Blue), Actual (Green), Proposed (Red)

Version 4

Dated 26 July 2019

Project Title: Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA)

Inputs	Plan	2015												2016												2017												2018												2019												2020												Remarks	Monitoring	
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12		Issue	Solution
Experts	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Chief Advisor 1 / Fundamental facilities	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Chief Advisor 2 / JICA Senior Advisor for Transportation Sector	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Project Coordinator 1	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Expert / Relocation planning & Project Coordinator 2	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Project Manager / Civil Engineer / Snow Removing / Airport Relocation	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Deputy Project Manager / Terminal Facilities / Communication Facilities / IT / Airport Relocation	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
CS Improvement Activities	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Airport Planning / Organization / Human Resource	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Charge Setting / Income & Expenditure Planning	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Tenant Management	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Ground handling services / Cargo	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Airport Operation / Safety	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Cargo	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Security	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Civil Engineer / Snow Removing	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Special Equipment (1)	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Special Equipment (2)	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Machinery Facilities (1)	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Machinery Facilities (2)	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Electrical Equipment (1)	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Electrical Equipment (2)	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Communication Facilities	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Information Technology	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Fuel Supervision (Safety Management) / Business Management	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Fuel Facility Management	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Fuel Operations & Maintenance	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Fuel Wing Service	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Relocation Planning	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Monitoring / Evaluation	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Training in Japan	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Airport Management (Executive)	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Airport Facilities (Executive)	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Aviation Fuel	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Operation & Maintenance of Airport Facilities	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Ground Handling Service / Cargo	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Tenant Management & Charge Setting	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
Customer Satisfaction	Actual	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														
In-country/Third country Training	Plan	[Blue]												[Blue]												[Blue]												[Blue]												[Blue]												[Blue]														

4-8 PO (Monitoring Sheet (ANS) Ver.7) (31 January 2021)

Project Monitoring Sheet II (Revision of Plan of Operation) (1/2)

Version 7 (1/2)
Dated 31 January 2021

Project Title: Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA) (ANS)

Inputs	2016												2017												2018											
Expert	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12				
ANS Chief Advisor	Plan																																			
ATC Training Expert	Plan																																			
CNS Training Expert (1)	Plan																																			
CNS Training Expert (2)	Plan																																			
Flight Inspection Expert	Plan																																			
Flight Procedure Design Expert (1)	Plan																																			
Flight Procedure Design Expert (2)	Plan																																			
Flight Procedure Design System Procurement support	Plan																																			
Equipment	Plan																																			
Automated Flight Procedure Design System	Plan																																			
Training in Japan	Plan																																			
Training Courses (Morita, Oyama, Fukushima/ATIS, etc.)	Plan																																			
Inter-country/Third country training	Plan																																			
Flight Procedure Design Training Course	Plan																																			
Activities	2016												2017												2018											
6.2.4-Activities	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12				
Output 7.1: Pre-operation Plan																																				
7-1-1 Develop a draft Pre-operation Plan	Plan																																			
7-1-2 Improve the Pre-operation Plan based on analysis on the draft	Plan																																			
7-1-3 Learn practices of airport/ANS coordination in Japan (including training in Japan)	Plan																																			
7-1-4 Monitor progress of the Pre-operation Plan, and adjust if necessary	Plan																																			
Output 7.2: Opening Day Plan																																				
7-2-1 Develop an Opening Day Plan	Plan																																			
7-2-2 Monitor progress of the Opening Day Plan, and adjust if necessary	Plan																																			
Output 7.3: Safety Assessment																																				
7-3-1 Assess risk and occurrence of unsafe events associated with new services	Plan																																			
7-3-2 Develop safety measures for critical safety items	Plan																																			
Output 7.4: Training of ATC officers																																				
7-4-1 Develop training program for ATC officers	Plan																																			
7-4-2 Develop ATC Operation Procedures	Plan																																			
7-4-3 Conduct training on ATC Operation Procedures	Plan																																			
7-4-4 Conduct simulator and test-operation training	Plan																																			
7-4-5 Develop Rating Standard	Plan																																			
7-4-6 Implement rating of ATC officers	Plan																																			
Output 7.5: Training of CNS engineers																																				
7-5-1 Develop training program for CNS engineers	Plan																																			
7-5-2 Develop CNS Maintenance Procedures	Plan																																			
7-5-3 Conduct training on CNS Maintenance Procedures	Plan																																			
7-5-4 Conduct On-the-job Training of CNS engineers	Plan																																			
7-5-5 Develop Tentative CNS Maintenance Procedures	Plan																																			
7-5-6 Implement Tentative CNS Maintenance at NUBIA	Plan																																			
Output 7.6: Training of Flight Inspection engineers																																				
7-6-1 Develop flight inspection procedures	Plan																																			
7-6-2 Conduct On-the-job Training of Flight Inspection engineers	Plan																																			
Output 7: Development of Flight Procedures for NUBIA																																				
7-7-1 Design instrument flight procedures (IFPs)	Plan																																			
7-7-2 Conduct ground validation	Plan																																			
7-7-3 Conduct flight calibration/validation	Plan																																			
7-7-4 Production of aeronautical charts for AIP	Plan																																			
Duration / Phasing	2016												2017												2018											
Monitoring Plan	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07	08	09	10	11	12				
Monitoring																																				
Joint Coordinating Committee	Plan																																			
Setup the Detailed Plan of Operation	Plan																																			
Submission of Monitoring Sheet	Plan																																			
Monitoring Mission from Japan	Plan																																			
Joint Monitoring	Plan																																			
Post Monitoring	Plan																																			
Reports/Documents																																				
Project Completion Report	Plan																																			
Public Relations	Plan																																			

Project Monitoring Sheet II (Revision of Plan of Operation) (2/2)

Version 7 (2/2)

Dated 31 January 2021

Project Title: Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA) (ANS)													Monitoring				
Inputs													Issue	Solution			
Activities													Japan	Mongolia	Issue & Countermeasures		
Inputs Expert ANS Chief Advisor ATC Training Expert CNS Training Expert (1) CNS Training Expert (2) Flight Inspection Expert Flight Procedure Design Expert (1) Flight Procedure Design Expert (2) Flight Procedure Design System Procurement support Equipment Automated Flight Procedure Design System Training in Japan Training Course(Maria, Cydia, Fukusai/ATM, etc.) In-country/Third country Training Flight Procedure Design Training Course													Remarks			Issue	Solution
Activities Sub-Activities Output 1-1: Pre-operation Plan 1-1-1 Develop a draft Pre-operation Plan 1-1-2 Improve the Pre-operation Plan based on analysis on the draft 1-1-3 Learn practices of airport/ANS coordination in Japan (including training in Japan) 1-1-4 Monitor progress of the Pre-operation Plan, and adjust if necessary Output 2: Opening Day Plan 2-1 Develop an Opening Day Plan 2-2 Monitor progress of the Opening Day Plan, and adjust if necessary Output 2-3: Safety Assessment 2-3-1 Assess risk and occurrence of unsafe events associated with new services 2-3-2 Develop safety measures for critical safety issues Output 2-4: Training of ATC officers 2-4-1 Develop training program for ATC officers 2-4-2 Develop ATC Operation Procedures 2-4-3 Conduct training on ATC Operation Procedures 2-4-4 Conduct simulator and test-operation training 2-4-5 Develop Rating Standard 2-4-6 Implement rating of ATC officers Output 2-5: Training of CNS engineers 2-5-1 Develop training program for CNS engineers 2-5-2 Develop CNS Maintenance Procedures 2-5-3 Conduct training on CNS Maintenance Procedures 2-5-4 Conduct On-the-Job Training of CNS engineers 2-5-5 Develop Tentative CNS Maintenance Procedures 2-5-6 Implement Tentative CNS Maintenance at NUBIA Output 2-6: Training of Flight Inspection engineers 2-6-1 Develop flight inspection procedures 2-6-2 Conduct On-the-Job Training of Flight Inspection engineers Output 2-7: Development of Flight Procedures for NUBIA 2-7-1 Design instrument flight procedures (IFPs) 2-7-2 Conduct ground validation 2-7-3 Conduct flight calibration/validation 2-7-4 Production of aeronautical charts for AP													Responsible Organization			Achievements	Issue & Countermeasures
Duration / Phasing 2019: 01-12, 2020: 01-12, 2021: 01-10													Remarks			Issue	Solution
Monitoring Plan Monitoring Joint Coordinating Committee Set-up the Detailed Plan of Operation Submission of Monitoring Sheet Monitoring Mission from Japan Joint Monitoring Post Monitoring Reports/Documents Project Completion Report Public Relations													Remarks			Issue	Solution

附属書 2: プロジェクト技術協力成果品のリスト

1. 空港運営

NUBIA の人材育成及び運営・維持管理能力向上プロジェクトの技術協力成果品のリストを以下に示す。

1-1 空港運営計画・組織・人員計画

- (1) Organization planning (NUBIA)
- (2) NUBIA Operator's organization chart study
- (3) Organization manpower planning schedule draft
- (4) List of manuals
 - (a) Organization Chart and Duty Allocation Procedure
 - (b) The Board of Directors' Procedure
 - (c) Chinggis Khaan International Airport Employee Ethics Rule
 - (d) Quality Assurance
 - (e) Document Control Procedure
 - (f) Contract Management Procedure
 - (g) Procedure of Plan Development, Its Approval and Report
 - (h) Archives and Records Management Procedure
 - (i) Internal Administration Procedure
 - (j) Employees' Social Welfare Procedure
 - (k) Award and Bonus Procedure
 - (l) Human Resource Recruitment and Selection Procedure
 - (m) Employee Evaluation Procedure
 - (n) Training and Employee Development Procedure
 - (o) Short-Term Business Plan Development Method
- (5) List of items to be purchased (Preparation cost for commercial operation)

1-2 グランドハンドリング

- (1) Action Plan 1 Documents relating Organization
 - (a) CAAM GHD regulation List (GHD: Ground Handling Department)
 - (b) CAAM Organization Chart
 - (c) CAAM GHD Members
 - (d) NUBIA Organization chart (2018.03.20)
- (2) Action plan 2 Documents relating Personnel
 - (a) NUBIA operation and maintenance members
 - (b) Necessary number of staff O&M at NUBIA
 - (c) GSE class and labor rate
 - (d) Peak hour manning calculation

- (e) GSE Maintenance Manning Calculation
 - (f) NUBIA Operation job requirements
 - (g) NUBIA Maintenance job requirements
 - (h) Occupational & Health safety equipment budget
 - (i) List of occupational & Health safety equipment
- (3) Action Plan 3 Documents relating GSE (Ground Support Equipment)
- (a) GSE to be transfer from CAAM GHD
 - (b) NUBIA project supplying GSE
 - (c) GSE at NUBIA
 - (d) GSE Dimension at NUBIA
 - (e) GSE Makers Documents
 - (f) GSE fuel consumption study
 - (g) NUBIA GSE Fire Extinguishers and Chokes List
 - (h) NUBIA GSE List (Number Plates)
 - (i) GSE Insurance and Tax expense
 - (j) GSE Fuel budget
 - (k) Necessary Fuel Type for GSE
 - (l) GSE Fuel Station (Location)
 - (m) GSE Fuel Station Plan
 - (n) GSE Fuel Station Specifications
- (4) Action Plan 5 Documents relating Manuals, Rules and Regulations
- (a) Aerodrome Manual Chapter 11 Vehicle control
 - (b) Airside Driving Safety Rules Handbook
 - (c) Ground Handling Service Unit Operation Manual
 - (d) Standard Ground Operations Procedures
 - (e) Vehicle Maintenance Service Unit Operation Manual
- (5) Action Plan 6 relating Training Plan
- (a) NUBIA Ground Handling OJT Plan
 - (b) NUBIA Ground Handling Training Plan
- (6) Action Plan 9 Documents relating Others
- (a) GSE Building Office Furniture
 - (b) GSE Maintenance Equipment and Tools
- (7) Action Plan 10 Documents relating Relocation
- (a) GSE Transported Dimension
 - (b) Relocation of GSE and Parts List
 - (c) Relocation Plan
 - (d) Relocation Report (2017.07.31)
 - (e) Relocation Road from CKIA to NUBIA
 - (f) GSE Garage Parking Plan

1-3 貨物

- (1) Action Plan 1 Documents relating Organization
- (2) Action Plan 2 Documents relating Personnel
- (3) Action Plan 3 Documents relating Facilities
- (4) Action Plan 4 Document relating Equipment
- (5) Action Plan 5 Document relating Operation
 - (a) Cargo Terminal Operation Manual
- (6) Action Plan 6 Document relating Manuals
 - (a) Cargo Handling Manual
 - (b) SOP (Standard Operation Procedures/Mongolian)
 - (c) NUBIA Manual Codes
 - (d) Draft Manual List
- (7) Action Plan 7 Document relating Training
- (8) Action Plan 8 Document relating Safety and quality control
- (9) Action Plan 9 Document relating Management of cargo terminal
 - (a) SOP (Standard Operation Procedures)
- (10) Action Plan 10 Document relating Others
 - (a) Air Cargo Research
- (11) Action Plan 11 Document relating Relocation
 - (a) Pre-cost assumption
 - (b) Equipment list for relocation
 - (c) Comparison between CKIA and NUBIA
 - (d) Relocation Plan

1-4 空港運用・安全管理

- (1) Organization structure
- (2) List of agreements
- (3) List of manuals
 - (a) Emergency plan (including emergency contact list)
 - (b) Safety management system
 - (c) Apron management
- (4) List of items to be purchased
- (5) List of items to be relocated from CKIA to NUBIA

1-5 保安

- (1) Organization structure
- (2) Audit and voluntary inspection plan
- (3) List of agreements
- (4) List of manuals

- (a) Airport security program
- (b) Airport security quality control program
- (c) In-line screening procedure
- (d) Airport fire safety regulation
- (e) Passenger terminal building fire safety regulation
- (f) Passenger terminal building evacuation plan
- (5) List of items to be purchased
- (6) List of items to be relocated from CKIA to NUBIA

1-6 テナント管理

- (1) Working guideline for Tenant Staff
 - (a) NUBIA Profile
 - (b) Service Hospitality
 - (c) Shop Operation Rule
 - (d) Backyard Rule
 - (e) Responses to disasters and crime
- (2) Instruction to prevent potential danger
- (3) Quality Control Regulation
- (4) Sales Promotion Regulation
- (5) Sales Management Regulation
- (6) Transportation and Delivery Regulation
- (7) Facility Maintenance Regulation
- (8) Service and hygiene Regulation
- (9) Advertisement Regulation
- (10) Floor Plan
- (11) Concession Space Rent Roll
- (12) Office Space Rent Roll
- (13) Advertisement Space List (size · fee · spec)
- (14) Parking Fee

1-7 料金設定・収支管理

- (1) Organization structure
- (2) Work flow for preparation of income and expenditure plans
- (3) List of charges and rate tables
- (4) Calculation of charges including elements and concepts
- (5) List of items to be purchased
- (6) List of items to be relocated from CKIA to NUBIA
- (7) List of Manuals
 - 1) Financial Management

- (a) System Financial Procedure
- (b) Cash Management Procedure
- 2) Accounting
 - (a) Budget approval and implementation procedure
 - (b) Accounting procedure
 - (c) Debt accounting procedure
 - (d) Revenue accounting procedure
 - (e) Expenditure accounting procedure
 - (f) Financial reporting procedure
 - (g) Receivable's accounting procedure
 - (h) Consolidated statement procedure
 - (i) Business segment procedure
- 3) Procurement
 - (a) Procurement procedure
- 4) Asset management
 - (a) Asset accounting procedure
 - (b) Property accounting procedure
 - (c) Fixed asset utilization procedure
 - (d) Fixed asset depreciation procedure
 - (e) Goods accounting procedure
- 5) Methodologies
 - (a) Charge setting methodology
 - (b) Planning method

1-8 顧客満足度向上

- (1) CEO Order /CS Working Group and CS Committee/
- (2) Member List /CS Working Group and CS Committee/
- (3) Survey Annual Report (2016 2Q).
- (4) CS Activities Plan 2017 and CS Event Plan 2017 2018
- (5) Report of CS Activities and Event 2017
- (6) CS Activities Plan 2018 and CS Event Plan 2018
- (7) Progress Status of CS Activities and Event 2018
- (8) CKIA Japan Training Report
- (9) CS Training Report /Disabilities/
- (10) CKIA CS Manual
- (11) NUBIA Organization Chart
- (12) CKIA and NUBIA Service Compare List
- (13) Passenger Terminal Services Visual
- (14) NUBIA Information Counter map

- (15) NUBIA Customer Suggestion box map
- (16) Preparation Cost for Commercial Operation
- (17) NUBIA CS Improvement Manual
- (18) CS Training for NUBIA
- (19) NUBIA Brochure

1-9 土木・除雪

- (1) Organization structure
- (2) Aerodrome manual
 - 1) Part 1. General information
 - 2) Part 2. Aerodrome site information
 - 3) Part 3. AIS information reporting
 - 4) Part 4. Aerodrome operating procedures
 - (a) Aerodrome reporting
 - (b) Access to the movement area
 - (c) Aerodrome emergency plan
 - (d) Rescue and fire fighting service
 - (e) Aerodrome inspection
 - (f) Visual aids electrical systems and lighting
 - (g) Movement area maintenance
 - (h) Aerodrome works safety
 - (i) Apron management
 - (j) Apron safety management
 - (k) Airside vehicle control
 - (l) Wild hazard management
 - (m) Obstacle control
 - (n) Disabled aircraft removal
 - (o) Handling of hazardous material
 - (p) Low visibility operations
 - (q) Protection of radar and navigation aids
 - 5) Part 5. Aerodrome administration and safety management system
- (3) Established the airport obstacle control safety zone at NUBIA
- (4) Determinate of Runway, Taxiway, and apron pavement classification number on NUBIA
- (5) NUBIA aerodrome work drawing plan
 - 1) Prepared and get approved the aerodrome information for AJP publications

1-10 特殊設備

- (1) Organization structure
- (2) List of NUBIA equipment

- (3) List of manuals
 - (a) X-ray Equipment Control Procedure
 - (b) Nuclear and Radiation Safety Program
 - (c) Security Screening Equipment Maintenance Procedures
 - (d) Passenger Boarding Bridge Maintenance Procedures
 - (e) Baggage Handling System Maintenance Procedures
 - (f) Passenger Elevator Maintenance Procedures
 - (g) Passenger Escalator Maintenance Procedures
 - (h) Automatic Sliding Doors Maintenance Procedures
 - (i) Automatic Shutter Doors Maintenance Procedures
 - (j) Building Management System Maintenance Procedures
 - (k) Explosive Detection System / EDX / Maintenance Procedures
 - (l) Special Equipment Unit Section Procedure
 - (m) Proper Usage Instruction for "CIMC TIANDA BS" Passenger Boarding Bridge
 - (n) Proper Usage of "DAIFUKU" Baggage Handling System
 - (o) Usage Instruction for "SIGMA-OTIS GPR" Passenger Elevator
 - (p) Usage Instruction for "SIGMA-VERA 30-1000" Escalator
 - (q) Usage Instruction for "ASSA ABLOY EMX-2" Automatic Glass Door
 - (r) Operation and Usage Instruction for "Overhead RHX" Electric Door of Luggage Hall
 - (s) Operation and Usage Instruction for Hand Detector (PD140N)
 - (t) Operation and Usage Instruction for Walk-through Metal Detector
 - (u) Usage and Operation Instruction for Building Management System
 - (v) Usage and Operation Instruction for "AXA2400 Power Coil" Airplane Switch and Ground Power
 - (w) Usage Instruction for X-ray HI-SCAN 6040i
 - (x) Usage Instruction for X-ray HI-SCAN 100100T-2is
 - (y) Operation and Usage Instruction for X-ray HI-SCAN 10080 EDX-2is
- (4) List of training
- (5) List of special permits
- (6) List of manufacturers' agencies
- (7) List of items to be purchased
- (8) List of additional works to be carried out
- (9) List of items to be relocated from CKIA to NUBIA
- (10) Education and familiarization training schedule in lead up to start up and commissioning of Special Equipment

1-11 機械

- (1) Organization structure
- (2) List of NUBIA equipment

- (3) List of manuals
 - (a) Facility operation and maintenance manual
 - (b) HVAC unit operation procedure
 - (c) Air handling unit maintenance procedure
 - (d) Chiller system maintenance procedure
 - (e) Fan coil unit maintenance procedure
 - (f) Package air condition cooling system maintenance procedure
 - (g) Heating air curtain maintenance procedure
 - (h) Exhaust fan maintenance procedure
 - (i) Building management system maintenance procedures
 - (j) Air handling unit operation procedure
 - (k) Chiller system operation procedure
 - (l) Fan coil unit operation procedure
 - (m) Package air condition cooling system operation procedure
 - (n) Heating air curtain operation procedure
 - (o) Exhaust fan operation procedure
 - (p) Usage and operation instruction for building management system
- (4) List of training
- (5) List of special permits
- (6) List of manufacturers' agencies
- (7) List of items to be purchased
- (8) List of additional works to be carried out
- (9) Examination of operating methods for heating plant, water treatment plant and sewage treatment plant

1-12 電気

- (1) Organization structure
- (2) List of NUBIA equipment
- (3) List of manuals
 - (a) Electrical unit operation procedure
 - (b) Electrical equipment operation procedure
 - (c) Electrical equipment maintenance procedure
- (1) List of contracts
- (2) List of training
- (3) List of special permits
- (4) List of manufacturers' agencies
- (5) List of items to be purchased

1-13 通信

- (1) Organization structure
- (2) List of NUBIA equipment
- (3) List of manuals
 - (a) Security system maintenance procedure
 - (b) Common use system, airport integrated management system maintenance procedure
 - (c) Information technology unit operation procedure
- (4) List of contracts
- (5) List of training
- (6) List of special permits
- (7) List of manufacturers' agencies
- (8) List of items to be purchased
- (9) List of additional works to be carried out
- (10) List of items to be relocated from CKIA to NUBIA

1-14 IT

- (1) Organization structure
- (2) List of NUBIA equipment
- (3) List of manuals
 - (a) Local area network and communication system maintenance procedure
 - (b) Cyber security procedure
- (4) List of contracts
- (5) List of training
- (6) List of special permits
- (7) List of manufacturers' agencies
- (8) List of items to be purchased
- (9) List of additional works to be carried out
- (10) List of items to be relocated from CKIA to NUBIA

1-15 給油施設

- (1) Action Plan, To do list
- (2) FSS operational manual
- (3) License of FSS
- (4) Spare parts and manufacturer list
- (5) Training materials
- (6) Certificate of employee training certificate
- (7) Safety and operation manual
- (8) Fuel estimation method records
- (9) Official letter related to FSS

(10) FSS commissioning schedule

(11) Fuel operating scheme proposal (Made by Mr. Dori on Aug, 2016)

2. 航空管制分野

NUBIA の人材育成及び運営・維持管理能力向上プロジェクト(航空管制分野)の技術協力成果品のリストを以下に示す。

2-1 航空管制分野供用準備本邦研修資料

- (1) The overview of Air Navigation Services in the Civil Aviation Bureau of Japan
- (2) Maintenance and Operation management of Aeronautical Lighting System and Electrical Facilities
- (3) Maintenance of AIR Navigation System by ATSEP
- (4) Technical Management of CNS Facilities
- (5) Overview of Narita International Airport
- (6) Ground Operations and Management at Narita International Airport
- (7) Narita International Airport Radio Navigation AIDs
- (8) Aeronautical Lighting Maintenance Center
- (9) CHUBU CENTRAIR International Airport
- (10) The preparatory work associated with Chubu International Airport Transfer
- (11) CHUBU CENTRAIR International Airport, Air Traffic Safety Electronics Personnel
- (12) Airport operations at Centrair Sharing of responsibilities and collaborative operations between JCAB and CJAC
- (13) Description of ATSEP Services in Fukuoka ACC

2-2 飛行検査官本邦研修資料

- (1) The overview of Air Navigation Services in the Civil Aviation Bureau of Japan (JCAB HQ)
- (2) Flight Inspection Services in Japan (JCAB HQ)
- (3) The Aeronautical Information Service Center (AIS Center, JCAB)
- (4) Instructor & Schedule (Flight Inspection Center, JCAB)
- (5) FIC Mission Overview (Flight Inspection Center, JCAB)
- (6) Automated Flight Inspection System Overview (Flight Inspection Center, JCAB)
- (7) Summary of JCAB Flight Validation (and Flight Validation Pilot) (Flight Inspection Center, JCAB)
- (8) Summary of JCAB Flight Validation Focused on Preflight Validation (Flight Inspection Center, JCAB)
- (9) FLIGHT INSPECTION of PBN Procedure (Flight Inspection Center, JCAB)
- (10) Navigation Data Base Processing (Flight Inspection Center, JCAB)
- (11) Summary of JCAB VSIM Validation (Flight Inspection Center, JCAB)
- (12) Portable HeliFIS (Flight Inspection Center, JCAB)
- (13) Data/Report Management (Flight Inspection Center, JCAB)
- (14) Sensor Calibration (Flight Inspection Center, JCAB)

(15) BRIEFING FOR FLIGHT (Flight Inspection Center, JCAB)

2-3 管制技術官本邦研修資料

- (1) CNS Facilities at Tokyo International Airport (Haneda Air Port, JAB)
- (2) Overview, Doppler VHF Omnidirectional radio Range Type DVOR-07A (Iwanuma Training Center, JCAB)
- (3) Learning of the maintenance method, Doppler VHF Omnidirectional radio Range Type DVOR-07A (Iwanuma Training Center, JCAB)
- (4) Obstacle Search Principle and Example, Doppler VHF Omnidirectional radio Range Type DVOR-07A (Iwanuma Training Center, JCAB)
- (5) Introduction of past difficult Failure, Rainwater invasion to VOR CAR Radome (Iwanuma Training Center, JCAB)
- (6) Summary of the TACAN Training (Iwanuma Training Center, JCAB)
- (7) ILS Category (Iwanuma Training Center, JCAB)
- (8) ILS Failure Cases (Iwanuma Training Center, JCAB)
- (9) ILS spare component replace and adjust (Iwanuma Training Center, JCAB)
- (10) ILS Maintenance and Inspection (Iwanuma Training Center, JCAB)
- (11) Training of ILS Flight inspection (LOC) (Iwanuma Training Center, JCAB)
- (12) Iwanuma Training (Iwanuma Training Center, JCAB)
- (13) Overview of Technical Management Center (TMC, JCAB)
- (14) Obstacle information, Safety information Sharing (TMC, JCAB)
- (15) Management of Spare Parts (TMC, JCAB)
- (16) Maintenance and Operation management of Aeronautical Lighting System and Electrical Facilities (ASC, JCAB)
- (17) Training of Visual Aids and Electrical Engineer in Aeronautical Safety College (ASC, JCAB)
- (18) Narita International Airport Aeronautical Ground Lighting Operation & Maintenance (Narita International Airport Corporation)

2-4 航空管制官本邦研修資料

- (1) The overview of Air Navigation Services in the Civil Aviation Bureau of Japan (JCAB HQ)
- (2) Air Traffic Controller's Training in Japan (JCAB HQ)
- (3) CHUBU CENTRAIR International Airport (JCAB)
- (4) Non Radar / Radar Control Operation (JCAB)
- (5) AIR TRAFFIC SERVICES IN MONGOLIA (CAAM)

2-5 モンゴルでの飛行方式設計研修資料

- (1) Training for PBN
- (2) Training for ILS, Baro-V, and D.Tool
- (3) Design Works on Conceptual Design

- (4) Detailed Design Works with PANADES
- (5) Flight Validation and Preparation of Draft AIP

2-6 ワークショップ資料

<General>

- (1) Project on ANS capacity building for NUBIA (28 June 2016)

<ATC>

- (2) Training of ATC Officers (10 Aug 2016)

<CNS>

- (3) Mini Work Shop of CNS Teams (Jun 2016)
- (4) 2nd Mini Work Shop of CNS Teams (5 Aug 2016)
- (5) CNS Division of CAAM (5 Aug 2016)
- (6) CNS Workshop-3, In response to the questions from CNS Engineers (11 Nov 2016)
- (7) CNS Workshop-5, MLAT, WAM, Future Surveillance Plan (Jul 2017)
- (8) Operation- Maintenance manual of Japan's Airport lights - Power facility (Aug 2016)
- (9) JCAB's Aeronautical Lighting System cooperation for NUBIA (Aug 2016)
- (10) Airport lights (Aug 2016)
- (11) Lighting and electrical technical training in Japan (Aug 2016)
- (12) Introduction and development of LED Aeronautical Ground Lights - RWSL (27 Jul 2017)
- (13) Maintenance and Operation and Management of Aeronautical Lighting System and Electrical Facilities (Jun 2019)

<Flight Inspection>

- (14) Flight Inspection of Japan (Jun 2016)
- (15) Introduction Flight Inspection of Japan (Nov 2016)
- (16) Why do Flight Inspection (Apr 2017)
- (17) Workshop About Nav. Facility Inspection Procedure up to the opening of NUBIA (Dec 2017)
- (18) Workshop, On AIP Notice of Flight Insp. Result (Collaboration FIPDS, CNS, AIS in CAAM) (Dec 2017)
- (19) Workshop, PREPARATIONS FOR AIP PUBLIC NOTICE FOR OPENING OF NUBIA (AIS, CAMM) (12 Dec 2017)

2-7 JICA専門家によるNUBIA開港報告書

- (1) Day by Day implementation Report for NUBIA Opening

2-8 CAAMとJICA専門家のWEB会議記録

- (1) Consideration List for WEB Meeting (25 Mar 2020)
- (2) Consideration List for WEB Meeting (1 Apr 2020)
- (3) Consideration List for WEB Meeting (8 Apr 2020)
- (4) Consideration List for WEB Meeting (16 Apr 2020)

- (5) Consideration List for WEB Meeting (23 Apr 2020)
- (6) Consideration List for WEB Meeting (30 Apr 2020)
- (7) Consideration List for WEB Meeting (6 May 2020)
- (8) Consideration List for WEB Meeting (13 May 2020)
- (9) Consideration List for WEB Meeting (21 May 2020)
- (10) Consideration List for WEB Meeting (27 May 2020)
- (11) Consideration List for WEB Meeting (3 Jun 2020)
- (12) Consideration List for WEB Meeting (11 Jun 2020)
- (13) Consideration List for WEB Meeting (18 Jun 2020)
- (14) Consideration List for WEB Meeting (22 Jun 2020)
- (15) Consideration List for WEB Meeting (30 Jun 2020)
- (16) Consideration List for WEB Meeting (22 Jul 2020)
- (17) Consideration List for WEB Meeting (29 Jul 2020)
- (18) Consideration List for WEB Meeting (5 Aug 2020)
- (19) Consideration List for WEB Meeting (12 Aug 2020)
- (20) Consideration List for WEB Meeting (19 Aug 2020)
- (21) Consideration List for WEB Meeting (26 Aug 2020)
- (22) Consideration List for WEB Meeting (3 Sep 2020)
- (23) Consideration List for WEB Meeting (9 Sep 2020)
- (24) Consideration List for WEB Meeting (16 Sep 2020)
- (25) Consideration List for WEB Meeting (25 Sep 2020)
- (26) Consideration List for WEB Meeting (27 Oct 2020)
- (27) Consideration List for WEB Meeting (23 Dec 2020)
- (28) Consideration List for WEB Meeting (20 Jan 2021)
- (29) Consideration List for WEB Meeting (26 Feb 2021)
- (30) Consideration List for WEB Meeting (18 Mar 2021)
- (31) Consideration List for WEB Meeting (15 Apr 2021)
- (32) Consideration List for WEB Meeting (14 May 2021)
- (33) Consideration List for WEB Meeting (24 May 2021)
- (34) Consideration List for WEB Meeting (4 Jun 2021)
- (35) Consideration List for WEB Meeting (11 Jun 2021)
- (36) Consideration List for WEB Meeting (18 Jun 2021)
- (37) Consideration List for WEB Meeting (23 Jun 2021)
- (38) Consideration List for WEB Meeting (30 Jun 2021)
- (39) Consideration List for WEB Meeting (9 Jul 2021)
- (40) Consideration List for WEB Meeting (20 Jul 2021)
- (41) Consideration List for WEB Meeting (3 Aug 2021)

2-9 JICA専門家派遣時の活動結果確認議事録

- (1) Memorandum of ANS Pre-Operation Work (1st Dispatch) (28 Jun 2016)
- (2) Memorandum of ANS Pre-Operation Work (2nd Dispatch) (19 Aug 2016)
- (3) Memorandum of ANS Pre-Operation Work (4th Dispatch) (10 Nov 2016)
- (4) Memorandum of ANS Pre-Operation Work (6th Dispatch) (22 Dec 2016)
- (5) Memorandum of ANS Pre-Operation Work (7th Dispatch) (16 Mar 2017)
- (6) Memorandum of ANS Pre-Operation Work (8th Dispatch) (27 Apr 2017)
- (7) Memorandum of ANS Pre-Operation Work (9th Dispatch) (6 Jul 2017)
- (8) Memorandum of ANS Pre-Operation Work (10th Dispatch) (4 Aug 2017)
- (9) Memorandum of ANS Pre-Operation Work (11th Dispatch) (15 Dec 2017)
- (10) Memorandum of ANS Pre-Operation Work (12th Dispatch) (18 Jan 2018)
- (11) Memorandum of ANS Pre-Operation Work (13th Dispatch) (26 Apr 2018)
- (12) Memorandum of ANS Pre-Operation Work (14th Dispatch) (31 Aug 2018)
- (13) Memorandum of ANS Pre-Operation Work (15th Dispatch) (7 Dec 2018)
- (14) Memorandum of ANS Pre-Operation Work (16th Dispatch) (14 Jun 2019)
- (15) Memorandum of ANS Pre-Operation Work (17th Dispatch) (5 Jul 2019)
- (16) Memorandum of ANS Pre-Operation Work (18th Dispatch) (5 Nov 2019)
- (17) Memorandum of ANS Pre-Operation Work (19th Dispatch) (6 Dec 2019)
- (18) Memorandum of ANS Pre-Operation Work (20th Dispatch) (17 Jan 2020)
- (19) Memorandum of ANS Pre-Operation Work (21st Dispatch) (21 Feb 2020)
- (20) Memorandum of ANS Pre-Operation Work (22nd Dispatch) (13 Sep 2021)

附属書 3: PDM

1. PDM ver. 1 (26 September 2014)

Project Design Matrix (Draft)

Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA)

Annex 1

Implementing Entity: Ministry of Roads, Transportation (MRT)

Project Implementation Period: From 12/2014-31/7/2017 (32 months)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal NUBIA, the capital airport of Mongolia, is upgraded in its capacity to be able to function appropriately in case of rapid increase of customers as the gateway of the country.	1. NUBIA is installed with the capacity to handle annual demand of passengers of approximately two (2) million properly. 2. Convenience of stakeholders, such as airlines using NUBIA, is increased.	1. Data on operation results accumulated by O&M 2. Questionnaire survey to stakeholders 3. Interviews with customers 4. Number of airlines using NUBIA 5. Comparison of non-aeronautical revenue, e.g. food and drinks and goods sales, between that of Chinggis Khaan International Airport	
Project Purpose Mechanism as well as capacity for O&M are strengthened in NUBIA for its smooth inauguration.	1. O&M organization of NUBIA is appropriately functioning by implementing the O&M organization plan. 2. Most of preparatory work is completed in the field of maintenance of runways, etc. along with the revised maintenance plan for NUBIA. 3. Most of preparatory work is completed in the field of fuel supply system along with O&M plan for NUBIA. 4. Most of preparatory work is completed in the field of tenant management along with the O&M plan for NUBIA with charge which is appropriately set for NUBIA. 5. Most of preparatory work is completed in the field of customer satisfaction (CS) improvement along with the plan for NUBIA. 6. Most of preparatory work is completed for relocation to NUBIA.	1. Structured interviews with C/Ps 2. Project report 3. Evaluation by Japanese expert 4. Self evaluation by O/Ps	1. Construction of access road to NUBIA, administration building, cargo terminal, waste treatment facilities, etc. is completed before the commissioning of NUBIA by the Mongolian side. 2. Staff training for human resource development is continuously carried out for NUBIA personnel by the Mongolian side. 3. Necessary procedures are smoothly taken by the competent authorities, esp. Ministry of Road and Transportation (MRT), on the establishment of O&M organization.
Output 1. O&M organization is established based on O&M organization plan including staff allocation.	1-1 C/Ps' knowledge on O&M organization is increased. 1-2 Regulations, manual, etc. for O&M organization at NUBIA are prepared. 1-3 Organizational chart is prepared for NUBIA.	1. O&M organization plan including staff allocation 2. Project report 3. Evaluation by Japanese expert 4. Self evaluation by O/Ps	
2. Implementation capacity for revised maintenance plan of runways etc. at NUBIA is improved.	2-1 O/Ps' knowledge on maintenance of runway, etc. is increased. 2-2 Regulations, manual, etc. for maintenance of runway, etc. at NUBIA are prepared. 2-3 Maintenance plan of runway, etc. at NUBIA is documented. 2-4 Staff are well educated on maintenance of runway, etc.	1. Revised maintenance plan of Runways, etc. 2. Project report 3. Evaluation by Japanese expert 4. Self evaluation by O/Ps	1. Laws and regulations concerning establishment of O&M organization are sufficiently consistent. 2. Necessary number of staff are assigned to O&M of NUBIA and continuously work on O&M activities.
3. Implementation capacity for newly developed O&M plan of fuel supply at NUBIA is improved.	3-1 O/Ps' knowledge on O&M of fuel supply system is increased. 3-2 Regulations, manual, etc. for O&M of fuel supply system at NUBIA are prepared. 3-3 O&M plan for O&M of fuel supply system at NUBIA is documented. 3-4 Staff are well educated on O&M of fuel supply system.	1. O&M plan on fuel supply system 2. Project report 3. Evaluation by Japanese expert 4. Self evaluation by O/Ps	
4. Implementation capacity for newly established charge setting system and tenant management plan at NUBIA is improved.	4-1 C/Ps' knowledge on charge setting methods and tenant management is increased. 4-2 Appropriate charge system is installed at NUBIA. 4-3 Regulations, manual, etc. for tenant management at NUBIA are prepared.	1. Charge system 2. Tenant management plan 3. Project report 4. Evaluation by Japanese expert 5. Self evaluation by O/Ps	
5. Implementation capacity for newly developed customer satisfaction (CS) plan for upgrading CS at NUBIA is improved.	5-1 C/Ps' knowledge on CS is increased. 5-2 Regulations, manual, activities for upgrading customer satisfaction (CS) at NUBIA are prepared. 5-3 Staff are well educated on CS improvement.	1. Operation plan for customer satisfaction (CS) 2. Project report 3. Evaluation by Japanese expert 4. Self evaluation by O/Ps	
6. Implementation capacity for newly developed relocation master plan is improved.	6-1 O/Ps have deepen their understanding on necessary activities for preparation for airport relocation. 6-2 Staff and other necessary resources are appropriately allocated for airport relocation.	1. Relocation master plan 2. Project report 3. Evaluation by Japanese expert 4. Self evaluation by O/Ps	
Activities	Input	Important Assumption	
1-1 Review the present situation of O&M at Chinggis Khaan International Airport. 1-2 Explain the O&M mechanism as well as activities taken in Japanese airport(s) with some field visits. 1-3 Support the implementation of Action Plan for establishing O&M organization at NUBIA (including staff allocation). 1-4 Provide training on airport operation. 2-1 Review the present situation of maintenance of runway, etc. at Chinggis Khaan International Airport. 2-2 Explain the mechanism as well as activities taken in Japanese airport(s) in the field of maintenance of runway, etc. with some field visits. 2-3 Support the implementation of Action Plan for maintenance of runway, etc. at NUBIA. 2-4 Provide training in some priority fields in maintenance of runway, etc. 3-1 Review the present situation of O&M of fuel supply system at Chinggis Khaan International Airport. 3-2 Explain the O&M mechanism as well as activities taken in Japanese airport(s) in the field of fuel supply system with some field visits. 3-3 Support the implementation of Action Plan for O&M in the field of fuel supply system at NUBIA. 3-4 Provide training in some priority fields in O&M of fuel supply system. 4-1 Review the present situation of operation as well as profitability of Chinggis Khaan International Airport. 4-2 Explain the charge setting methods as well as tenant management taken in Japanese airport(s) with some field visits. 4-3 Support the implementation of Action Plan for charge setting at NUBIA. 4-4 Support the implementation of Action Plan for tenant management at NUBIA. 4-5 Provide training on tenant management. 5-1 Review the present situation of customer services at Chinggis Khaan International Airport. 5-2 Explain the mechanism as well as activities taken in Japanese airport(s) in the field of customer satisfaction (CS) improvement with some field visits. 5-3 Support the implementation of Action Plan for customer satisfaction (CS) improvement. 5-4 Provide training on customer satisfaction (CS) improvement. 6-1 Review the procedures as well as the progress of preparation for start up and commissioning of NUBIA. 6-2 Explain the method as well as the activities taken in Japanese airport(s) in the field of airport relocation. 6-3 Support the implementation of Action Plan for airport relocation to NUBIA.	<p>Japanese side</p> <p>1. Dispatch of Japanese Experts</p> <p><i>Fields of Experts</i></p> <ul style="list-style-type: none"> Organization planning / Airport operation Airport facilities O&M planning Pavement Fuel supply system Charge setting Tenant management Customer satisfaction (CS) improvement Airport relocation Coordinator <p>2. Training in Japan</p> <p><i>Fields of Training</i></p> <ul style="list-style-type: none"> Organization planning / Airport operation, Airport facilities O&M planning, Pavement, Fuel supply system, Tenant management, Customer satisfaction (CS) improvement <p>3. Equipment</p> <p><i>In case of necessity of description</i></p> <p>4. Cost</p> <p>Project assistant / interpreter</p>	<p>Mongolian side</p> <p>1. Assignment of Counterpart Personnel (C/P)</p> <p>① Steering Committee for O&M (at management level) As the responsible organization for decision-making</p> <p>② O&M Team (at administration level)</p> <ul style="list-style-type: none"> Organization planning / Airport operation Airport facilities O&M planning Pavement Fuel supply system Charge setting Tenant management Customer satisfaction (CS) improvement Airport relocation <p>③ Selection of trainees</p> <p>2. Provision of facilities for the Project implementation</p> <ul style="list-style-type: none"> Office space Office facilities, etc. <p>3. Equipment</p> <p>Necessary equipment for the Project implementation</p> <p>4. Local cost</p> <ul style="list-style-type: none"> Cost for office space facilities (including for electricity, water, telephone & communication, etc.) Others (Survey, etc.) 	<p>Prerequisites</p> <p>1. The organizations found below are officially established in Mongolia, before the Project starts. ① Steering Committee for O&M (at management level) ② O&M Team (at administrative level)</p> <p>2. Budget for the Project implementation is properly allocated by the Mongolian side, before the Project starts. 3. Necessary facilities/equipment for the Project implementation are properly provided by the Mongolian side, before the Project starts.</p>

2. PDM ver. 2 (22 April 2016)

Annex3: Project Design Matrix (PDM) with Additional Activities on ANS at NUBIA

Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA)

Implementing Entity: Ministry of Roads, Transportation (MRT)

Version No.2 Dated on April 2016

Target Group : NUBIA Pre-Operation Division, O&M Team, ANS-WG

Project Implementation Period: From 12/2014-31/07/2017 (32 months)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal NUBIA, the capital airport of Mongolia, is upgraded in its capacity to be able to function appropriately in case of rapid increase of customers as the gateway of the country.	1. NUBIA is installed with the capacity to handle annual demand of passengers of approximately two (2) million properly. 2. Convenience of stakeholders, such as airlines using NUBIA, is increased.	1. Data on operation results accumulated by CAAM 2. Questionnaire survey to stakeholders 3. Interviews with customers 4. Number of airlines using NUBIA 5. Comparison of non-aeronautical revenue, e.g. food and drinks, and goods sales, between that of Chinggis Khaan International Airport and NUBIA	
Project Purpose Mechanism as well as capacity for O&M is strengthened in NUBIA for its smooth inauguration.	In accordance with the To Do List, the works 1-6 listed below are completed for inauguration: 1. O&M organization of NUBIA is established and starts functioning. 2. Preparatory work in the field of maintenance of runways, etc. along with the revised maintenance plan for NUBIA. 3. Preparatory work in the field of fuel supply system along with O&M plan for NUBIA. 4. Preparatory work in the field of tenant management for NUBIA along with the O&M plan for NUBIA including appropriate charges. 5. Preparatory work in the field of customer satisfaction (CS) improvement along with the O&M plan for NUBIA. 6. Preparatory work for relocation to NUBIA. 7. Preparatory work for provision of Air Navigation services at NUBIA is completed in accordance with Pre-operation Plan	1. Structured interviews with C/Ps 2. Project report 3. Evaluation by Japanese experts 4. Self-evaluation by C/Ps	1. Construction of access road to NUBIA, administration building, cargo terminal, waste treatment facilities, etc. is completed before the commissioning of NUBIA by the Mongolian side. 2. Staff training for human resource development is continuously carried out for NUBIA personnel by the Mongolian side. 3. Necessary procedures are smoothly taken by the competent authorities, esp. Ministry of Road and Transportation (MRT), on the establishment of O&M organization.
Output			
1. O&M organization is established based on O&M plan including staff allocation.	In accordance with the To Do List, 1-1 C/Ps' knowledge on O&M organization is increased. 1-2 Regulations, manual, etc. for O&M organization at NUBIA are prepared. 1-3 Organizational chart is prepared for NUBIA. 1-4 Staff are allocated and meet the quota	1. O&M organization plan including staff allocation 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	1. Laws and regulations concerning establishment of O&M organization are sufficiently consistent 2. Necessary number of staff are assigned to O&M of NUBIA and continuously work on O&M activities.
2. Implementation capacity for revised maintenance plan of runways etc. at NUBIA is improved.	In accordance with the To Do List, 2-1 C/Ps' knowledge on maintenance of runway, etc. is increased. 2-2 Regulations, manual, etc. for maintenance of runway, etc. at NUBIA are prepared. 2-3 Maintenance plan of runway, etc. at NUBIA is documented. 2-4 Staff are well educated on maintenance of runway, etc.	1. Revised maintenance plan of Runways, etc. 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
3. Implementation capacity for newly developed O&M plan of fuel supply at NUBIA is improved.	In accordance with the To Do List, 3-1 C/Ps' knowledge on O&M of fuel supply system is increased. 3-2 Regulations, manual, etc. for O&M of fuel supply system at NUBIA are prepared. 3-3 O&M plan for O&M of fuel supply system at NUBIA is documented. 3-4 Staff are well educated on O&M of fuel supply system.	1. O&M plan on fuel supply system 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
4. Implementation capacity for newly established charge setting system and tenant management plan at NUBIA is improved.	In accordance with the To Do List, 4-1 C/Ps' knowledge on charge setting methods and tenant management is increased. 4-2 Appropriate charge system is installed at NUBIA. 4-3 Regulations, manual, etc. for tenant management at NUBIA are prepared.	1. Charge system 2. Tenant management plan 3. Project report 4. Evaluation by Japanese expert 5. Self-evaluation by C/Ps 6. Check List of the To Do List	
5. Implementation capacity for newly developed customer satisfaction (CS) plan for upgrading CS at NUBIA is improved.	In accordance with the To Do List, 5-1 C/Ps' knowledge on CS is increased. 5-2 Regulations, manual, activities for upgrading customer satisfaction (CS) at NUBIA are prepared. 5-3 Staff are well educated on CS improvement.	1. Operation plan for customer satisfaction (CS) 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
6. Implementation capacity for newly developed relocation master plan is improved.	In accordance with the To Do List, 6-1 C/Ps have deepened their understanding on necessary activities for preparation for airport relocation. 6-2 Staff and other necessary resources are appropriately allocated for airport relocation.	1. Relocation master plan 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
7. Capacity of CAAM is developed for provision of Air Navigation Services at NUBIA	7-1 Pre-operation Plan is developed, implemented and monitored. 7-2 Opening Day Plan is developed, implemented and monitored 7-3 Safety assessment by CAAM inspectors is completed for ATM and CNS. 7-4 At least 32 officers are rated for ATC at NUBIA. 7-5 At least 25 engineers are capable of maintaining CNS systems at NUBIA. 7-6 At least 6 engineers are capable of conducting flight inspection of IFPs. 7-7 Conventional IFPs for NUBIA are issued in AIP. 7-8 PBN IFPs for NUBIA are issued in AIP.	1. Project report 2. Evaluation by Japanese expert 3. Self-evaluation by C/Ps	

Activities	Inputs		Important Assumption
	Japanese side	Mongolian side	
<p>1-1 Review the present situation of O&M at Chinggis Khaan International Airport</p> <p>1-2 Learn the O&M mechanism as well as activities taken in Japanese airport(s) with some field visits</p> <p>1-3 Implement Action Plan for establishing O&M organization at NUBIA (including staff allocation)</p> <p>1-4 Conduct training on airport operation</p> <p>2-1 Review the present situation of maintenance of runway, etc. at Chinggis Khaan International Airport</p> <p>2-2 Learn the mechanism as well as activities taken in Japanese airport(s) in the field of maintenance of runway, etc. with some field visits.</p> <p>2-3 Implement Action Plan for maintenance of runway, etc. at NUBIA</p> <p>2-4 Conduct training in some priority fields in maintenance of runways, etc.</p> <p>3-1 Review the present situation of O&M of fuel supply system at Chinggis Khaan International Airport</p> <p>3-2 Learn the O&M mechanism as well as activities taken in Japanese airport(s) in the field of fuel supply system with some field visits</p> <p>3-3 Implement Action Plan for O&M in the field of fuel supply system at NUBIA</p> <p>3-4 Conduct training in some priority fields in O&M of fuel supply system</p> <p>4-1 Review the present situation of operation as well as profitability of Chinggis Khaan International Airport</p> <p>4-2 Learn the charge setting methods as well as tenant management taken in Japanese airport(s) with some field visits.</p> <p>4-3 Implement Action Plan for charge setting at NUBIA</p> <p>4-4 Implement Action Plan for tenant management at NUBIA</p> <p>4-5 Conduct training on tenant management</p> <p>5-1 Review the present situation of customer services at Chinggis Khaan International Airport</p> <p>5-2 Learn the mechanism as well as activities taken in Japanese airport(s) in the field of customer satisfaction (CS) improvement with some field visits</p> <p>5-3 Implement Action Plan for customer satisfaction (CS) improvement</p> <p>5-4 Conduct training on customer satisfaction (CS) improvement</p> <p>6-1 Review the procedures as well as the progress of preparation for startup and commissioning of NUBIA</p> <p>6-2 Learn the method as well as the activities taken in Japanese airport(s) in the field of airport relocation</p> <p>6-3 Implement Action Plan for airport relocation to NUBIA</p> <p>7-1 Pre-operation Plan</p> <p>7-1-1 Develop a draft Pre-operation Plan</p> <p>7-1-2 Learn practices of airport/ANS coordination in Japan (including training in Japan)</p> <p>7-1-3 Improve the Pre-operation Plan based on analysis on the draft</p> <p>7-1-4 Monitor progress of the Pre-operation Plan, and adjust if necessary</p> <p>7-2 Opening Day Plan</p> <p>7-2-1 Develop an Opening Day Plan</p> <p>7-2-2 Monitor progress of the Opening Day Plan, and adjust if necessary</p> <p>7-3 Safety Assessment</p> <p>7-3-1 Assess risk and occurrence of unsafe events associated with new services</p> <p>7-3-2 Develop safety measures for critical safety issues</p> <p>7-4 Training of ATC officers</p> <p>7-4-1 Develop training program for ATC officers</p> <p>7-4-2 Develop ATC Operation Procedures</p> <p>7-4-3 Conduct training on ATC Operation Procedures</p> <p>7-4-4 Conduct simulator and test-operation training</p> <p>7-4-5 Develop Rating Standard</p> <p>7-4-6 Implement rating of ATC officers</p> <p>7-5 Training of CNS engineers</p> <p>7-5-1 Develop training program for CNS engineers</p> <p>7-5-2 Develop CNS Maintenance Procedures</p> <p>7-5-3 Conduct training on CNS Maintenance Procedures</p> <p>7-5-4 Conduct On-the-Job Training of CNS engineers</p> <p>7-6 Training of Flight Inspection engineers</p> <p>7-6-1 Develop flight inspection procedures</p> <p>7-6-2 Conduct On-the-Job Training of Flight Inspection engineers</p> <p>7-7 Development of Flight Procedures for NUBIA</p> <p>7-7-1 Design instrument flight procedures (IFPs)</p> <p>7-7-2 Conduct grand validation</p> <p>7-7-3 Conduct flight calibration/validation</p> <p>7-7-4 Production of aeronautical charts for AIP</p>	<p>1. Dispatch of Japanese Experts</p> <p><u>Fields of Experts</u></p> <ul style="list-style-type: none"> - Organization planning / Airport operation - Airport facilities O&M planning - Pavement - Fuel supply system - Charge setting - Tenant management - Customer satisfaction (CS) improvement - Airport relocation - Coordinator - ANS Chief Advisor - ATC Training Expert - CNS Training Expert - Flight Inspection Expert - Flight Procedure Design Expert <p>2. Training in Japan</p> <p><u>Fields of Training</u></p> <p>Organization planning / Airport operation, Airport facilities O&M planning, Pavement, Fuel supply system, Tenant management, Customer satisfaction (CS) improvement, Management training on airport/ANS coordination for middle-class managers or key persons</p> <p>3. Equipment</p> <p>Automated Flight Procedure Design System (6-month use)</p> <p>4. Cost</p> <p>Project assistant / interpreter</p>	<p>1. Assignment of Counterpart Personnel (C/P)</p> <p>a) Steering Committee for O&M (at management level)</p> <ul style="list-style-type: none"> - As the responsible organization for decision-making <p>b) O&M Team (at administration level)</p> <ul style="list-style-type: none"> - Organization planning /Airport operation - Airport facilities O&M planning - Pavement - Fuel supply system - Charge setting - Tenant management - Customer satisfaction (CS) improvement - Airport relocation <p>c) Selection of trainees</p> <p>d) ANS Pre-operation Working Group</p> <ul style="list-style-type: none"> - Pre-operation Planning Team - ATC Training Team - CNS Training Team - Flight Inspection Team - Flight Procedure Design Team <p>2. Provision of facilities for the Project Implementation</p> <ul style="list-style-type: none"> - Office space - Office facilities etc. <p>3. Equipment</p> <ul style="list-style-type: none"> - Necessary equipment for the Project implementation - Flight inspection services for CNS equipment and PBN flight procedures - ATC training simulator <p>4. Local cost</p> <ul style="list-style-type: none"> - Cost for office space/facilities (including for electricity, water, telephone & communication, etc.) - Others (data, information, survey results, etc.) 	<p><u>Preconditions</u></p> <p>1. The organizations found below are officially established in Mongolia, before the Project starts.</p> <p>a) Steering Committee for O&M (at management level)</p> <p>b) O&M Team (at administrative level)</p> <p>2. Budget for the Project implementation is properly allocated by the Mongolian side, before the Project starts.</p> <p>3. Necessary facilities/equipment for the Project implementation are properly provided by the Mongolian side, before the Project starts.</p>

3. PDM ver. 3 (7 April 2017)

Annex3: Project Design Matrix (PDM) (2nd Amended)

Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA)

Implementing Entity: Ministry of Road and Transport Development (MRTD)

Version No.3 Dated on March 2017

Target Group : NUBIA Pre-Operation Administration (POA), ANS-Pre-Operation WG and PIU Project Implementation Period: 28/1/2015-27/07/2018 (42 months)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal NUBIA, the capital airport of Mongolia, is upgraded in its capacity to be able to function appropriately in case of rapid increase of customers as the gateway of the country.	1. NUBIA is installed with the capacity to handle annual demand of passengers of approximately two (2) million properly. 2. Convenience of stakeholders, such as airlines using NUBIA, is increased.	1. Data on operation results accumulated by CAAM 2. Questionnaire survey to stakeholders 3. Interviews with customers 4. Number of airlines using NUBIA 5. Comparison of non-aeronautical revenue, e.g. food and drinks, and goods sales, between that of Chinggis Khaan International Airport and NUBIA	
Project Purpose Mechanism as well as capacity for O&M is strengthened in NUBIA for its smooth inauguration.	In accordance with the To Do List, the works 1-6 listed below are completed for inauguration: 1. O&M organization of NUBIA is established and starts functioning. 2. Preparatory work in the field of maintenance of runways, etc. along with the revised maintenance plan for NUBIA. 3. Preparatory work in the field of fuel supply system along with O&M plan for NUBIA. 4. Preparatory work in the field of tenant management for NUBIA along with the O&M plan for NUBIA including appropriate charges. 5. Preparatory work in the field of customer satisfaction (CS) improvement along with the O&M plan for NUBIA. 6. Preparatory work for relocation to NUBIA. 7. Preparatory work for provision of Air Navigation services at NUBIA is completed in accordance with Pre-operation Plan	1. Structured interviews with C/Ps 2. Project report 3. Evaluation by Japanese experts 4. Self-evaluation by C/Ps	1. Construction of access road to NUBIA, administration building, cargo terminal, waste treatment facilities, etc. is completed before the commissioning of NUBIA by the Mongolian side. 2. Staff training for human resource development is continuously carried out for NUBIA personnel by the Mongolian side. 3. Necessary procedures are smoothly taken by the competent authorities, esp. Ministry of Road and Transportation (MRT), on the establishment of O&M organization.
Output			
1. O&M organization is established based on O&M plan including staff allocation.	In accordance with the To Do List, 1-1 C/Ps' knowledge on O&M organization is increased. 1-2 Regulations, manual, etc. for O&M organization at NUBIA are prepared. 1-3 Organizational chart is prepared for NUBIA. 1-4 Staff are allocated and meet the quota	1. O&M organization plan including staff allocation 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	1. Laws and regulations concerning establishment of O&M organization are sufficiently consistent. 2. Necessary number of staff are assigned to O&M of NUBIA and continuously work on O&M activities.
2. Implementation capacity for revised maintenance plan of runways etc. at NUBIA is improved.	In accordance with the To Do List, 2-1 C/Ps' knowledge on maintenance of runway, etc. is increased. 2-2 Regulations, manual, etc. for maintenance of runway, etc. at NUBIA are prepared. 2-3 Maintenance plan of runway, etc. at NUBIA is documented. 2-4 Staff are well educated on maintenance of runway, etc.	1. Revised maintenance plan of Runways, etc. 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
3. Implementation capacity for newly developed O&M plan of fuel supply at NUBIA is improved.	In accordance with the To Do List, 3-1 C/Ps' knowledge on O&M of fuel supply system is increased. 3-2 Regulations, manual, etc. for O&M of fuel supply system at NUBIA are prepared. 3-3 O&M plan for O&M of fuel supply system at NUBIA is documented. 3-4 Staff are well educated on O&M of fuel supply system.	1. O&M plan on fuel supply system 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
4. Implementation capacity for newly established charge setting system and tenant management plan at NUBIA is improved.	In accordance with the To Do List, 4-1 C/Ps' knowledge on charge setting methods and tenant management is increased. 4-2 Appropriate charge system is installed at NUBIA. 4-3 Regulations, manual, etc. for tenant management at NUBIA are prepared.	1. Charge system 2. Tenant management plan 3. Project report 4. Evaluation by Japanese expert 5. Self-evaluation by C/Ps 6. Check List of the To Do List	
5. Implementation capacity for newly developed customer satisfaction (CS) plan for upgrading CS at NUBIA is improved.	In accordance with the To Do List, 5-1 C/Ps' knowledge on CS is increased. 5-2 Regulations, manual, activities for upgrading customer satisfaction (CS) at NUBIA are prepared. 5-3 Staff are well educated on CS improvement.	1. Operation plan for customer satisfaction (CS) 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
6. Implementation capacity for newly developed relocation master plan is improved.	In accordance with the To Do List, 6-1 C/Ps have deepened their understanding on necessary activities for preparation for airport relocation. 6-2 Staff and other necessary resources are appropriately allocated for airport relocation.	1. Relocation master plan 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
7. Capacity of CAAM is developed for provision of Air Navigation Services at NUBIA	7-1 Pre-operation Plan is developed, implemented and monitored. 7-2 Opening Day Plan is developed, implemented and monitored 7-3 Safety assessment by CAAM inspectors is completed for ATM and CNS. 7-4 At least 32 officers are rated for ATC at NUBIA. 7-5 At least 26 engineers are capable of maintaining CNS systems at NUBIA. 7-6 At least 6 engineers are capable of conducting flight inspection of IFPs. 7-7 Conventional IFPs for NUBIA are issued in AIP. 7-8 PBN IFPs for NUBIA are issued in AIP.	1. Project report 2. Evaluation by Japanese expert 3. Self-evaluation by C/Ps	

Activities	Inputs		Important Assumption
	Japanese side	Mongolian side	
<p>1-1 Review the present situation of O&M at Chinggis Khaan International Airport</p> <p>1-2 Learn the O&M mechanism as well as activities taken in Japanese airport(s) with some field visits</p> <p>1-3 Implement Action Plan for establishing O&M organization at NUBIA (including staff allocation)</p> <p>1-4 Conduct training on airport operation</p> <p>2-1 Review the present situation of maintenance of runway, etc. at Chinggis Khaan International Airport</p> <p>2-2 Learn the mechanism as well as activities taken in Japanese airport(s) in the field of maintenance of runway, etc. with some field visits</p> <p>2-3 Implement Action Plan for maintenance of runway, etc. at NUBIA</p> <p>2-4 Conduct training in some priority fields in maintenance of runways, etc.</p> <p>3-1 Review the present situation of O&M of fuel supply system at Chinggis Khaan International Airport</p> <p>3-2 Learn the O&M mechanism as well as activities taken in Japanese airport(s) in the field of fuel supply system with some field visits</p> <p>3-3 Implement Action Plan for O&M in the field of fuel supply system at NUBIA</p> <p>3-4 Conduct training in some priority fields in O&M of fuel supply system</p> <p>4-1 Review the present situation of operation as well as profitability of Chinggis Khaan International Airport</p> <p>4-2 Learn the charge setting methods as well as tenant management taken in Japanese airport(s) with some field visits.</p> <p>4-3 Implement Action Plan for charge setting at NUBIA</p> <p>4-4 Implement Action Plan for tenant management at NUBIA</p> <p>4-5 Conduct training on tenant management</p> <p>5-1 Review the present situation of customer services at Chinggis Khaan International Airport</p> <p>5-2 Learn the mechanism as well as activities taken in Japanese airport(s) in the field of customer satisfaction (CS) improvement with some field visits</p> <p>5-3 Implement Action Plan for customer satisfaction (CS) improvement</p> <p>5-4 Conduct training on customer satisfaction (CS) improvement</p> <p>6-1 Review the procedures as well as the progress of preparation for startup and commissioning of NUBIA</p> <p>6-2 Learn the method as well as the activities taken in Japanese airport(s) in the field of airport relocation</p> <p>6-3 Implement Action Plan for airport relocation to NUBIA</p> <p>7-1 Pre-operation Plan</p> <p>7-1-1 Develop a draft Pre-operation Plan</p> <p>7-1-2 Learn practices of airport/ANS coordination in Japan (including training in Japan)</p> <p>7-1-3 Improve the Pre-operation Plan based on analysis on the draft</p> <p>7-1-4 Monitor progress of the Pre-operation Plan, and adjust if necessary</p> <p>7-2 Opening Day Plan</p> <p>7-2-1 Develop an Opening Day Plan</p> <p>7-2-2 Monitor progress of the Opening Day Plan, and adjust if necessary</p> <p>7-3 Safety Assessment</p> <p>7-3-1 Assess risk and occurrence of unsafe events associated with new services</p> <p>7-3-2 Develop safety measures for critical safety issues</p> <p>7-4 Training of ATC officers</p> <p>7-4-1 Develop training program for ATC officers</p> <p>7-4-2 Develop ATC Operation Procedures</p> <p>7-4-3 Conduct training on ATC Operation Procedures</p> <p>7-4-4 Conduct simulator and test-operation training</p> <p>7-4-5 Develop Rating Standard</p> <p>7-4-6 Implement rating of ATC officers</p> <p>7-5 Training of CNS engineers</p> <p>7-5-1 Develop training program for CNS engineers</p> <p>7-5-2 Develop CNS Maintenance Procedures</p> <p>7-5-3 Conduct training on CNS Maintenance Procedures</p> <p>7-5-4 Conduct On-the-Job Training of CNS engineers</p> <p>7-5-5 Develop Tentative CNS Maintenance Procedures</p> <p>7-5-6 Implement Tentative CNS Maintenance at NUBIA</p> <p>7-6 Training of Flight Inspection engineers</p> <p>7-6-1 Develop flight inspection procedures</p> <p>7-6-2 Conduct On-the-Job Training of Flight Inspection engineers</p> <p>7-7 Development of Flight Procedures for NUBIA</p> <p>7-7-1 Design instrument flight procedures (IFPs)</p> <p>7-7-2 Conduct grand validation</p> <p>7-7-3 Conduct flight calibration/validation</p> <p>7-7-4 Production of aeronautical charts for AIP</p>	<p>1. Dispatch of Japanese Experts</p> <p><u>Fields of Experts</u></p> <ul style="list-style-type: none"> - Organization planning / Airport operation - Airport facilities O&M planning - Pavement - Fuel supply system - Charge setting - Tenant management - Customer satisfaction (CS) improvement - Airport relocation - Coordinator - ANS Chief Advisor - ATC Training Expert - CNS Training Expert - Flight Inspection Expert - Flight Procedure Design Expert <p>2. Training in Japan</p> <p><u>Fields of Training</u></p> <p>Organization planning / Airport operation, Airport facilities O&M planning, Pavement, Fuel supply system, Tenant management, Customer satisfaction (CS) improvement, Management training on airport/ANS coordination for middle-class managers or key persons, ANS on-site practical work training for ATC officers, CNS engineers and Flight Inspection engineers</p> <p>3. Equipment</p> <p>Automated Flight Procedure Design System (Until end of March, 2018)</p> <p>4. Cost</p> <p>Project assistant / interpreter</p>	<p>1. Assignment of Counterpart Personnel (C/P)</p> <p>a) Steering Committee for O&M (at management level)</p> <ul style="list-style-type: none"> - As the responsible organization for decision-making <p>b) O&M Team (at administration level)</p> <ul style="list-style-type: none"> - Organization planning /Airport operation - Airport facilities O&M planning - Pavement - Fuel supply system - Charge setting - Tenant management - Customer satisfaction (CS) improvement - Airport relocation <p>c) Selection of trainees</p> <p>d) ANS Pre-operation Working Group</p> <ul style="list-style-type: none"> - Pre-operation Planning Team - ATC Training Team - CNS Training Team - Flight Inspection Team - Flight Procedure Design Team <p>2. Provision of facilities for the Project implementation</p> <ul style="list-style-type: none"> - Office space - Office facilities etc. <p>3. Equipment</p> <ul style="list-style-type: none"> - Necessary equipment for the Project implementation - Flight inspection services for CNS equipment and PBN flight procedures - ATC training simulator <p>4. Local cost</p> <ul style="list-style-type: none"> - Cost for office space/facilities (including for electricity, water, telephone & communication, etc.) - Others (data, information, survey results, etc.) 	<p><u>Preconditions</u></p> <p>1. "The organizations found below are officially established in Mongolia, before the Project starts.</p> <p>a) Steering Committee for O&M (at management level)</p> <p>b) O&M Team (at administrative level)</p> <p>2. "Budget for the Project implementation is properly allocated by the Mongolian side, before the Project starts.</p> <p>3. Necessary facilities/equipment for the Project implementation are properly provided by the Mongolian side, before the Project starts.</p>

4. PDM ver. 4 (5 June 2018)

Annex1: Project Design Matrix (PDM) (3rd Amended)

Project for Human Resource Development and O&M Capacity Development for New Ulaanbaatar International Airport (NUBIA)

Implementing Entity: Ministry of Road and Transport Development (MRTD)

Version No.4 Dated on April 2018

Target Group : NUBIA Pre-Operation Administration (POA), ANS-Pre-Operation WG and PIU

Project Implementation Period: 28/1/2015-27/07/2019 (54 months)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal NUBIA, the capital airport of Mongolia, is upgraded in its capacity to be able to function appropriately in case of rapid increase of customers as the gateway of the country.	1. NUBIA is installed with the capacity to handle annual demand of passengers of approximately two (2) million properly. 2. Convenience of stakeholders, such as airlines using NUBIA, is increased.	1. Data on operation results accumulated by CAAM 2. Questionnaire survey to stakeholders 3. Interviews with customers 4. Number of airlines using NUBIA 5. Comparison of non-aeronautical revenue, e.g. food and drinks, and goods sales, between that of Chinggis Khaan International Airport and NUBIA	
Project Purpose Mechanism as well as capacity for O&M is strengthened in NUBIA for its smooth inauguration.	In accordance with the To Do List, the works 1-6 listed below are completed for inauguration: 1. O&M organization of NUBIA is established and starts functioning. 2. Preparatory work in the field of maintenance of runways, etc. along with the revised maintenance plan for NUBIA. 3. Preparatory work in the field of fuel supply system along with O&M plan for NUBIA. 4. Preparatory work in the field of tenant management for NUBIA along with the O&M plan for NUBIA including appropriate charges. 5. Preparatory work in the field of customer satisfaction (CS) improvement along with the O&M plan for NUBIA. 6. Preparatory work for relocation to NUBIA. 7. Preparatory work for provision of Air Navigation services at NUBIA is completed in accordance with Pre-operation Plan	1. Structured interviews with C/Ps 2. Project report 3. Evaluation by Japanese experts 4. Self-evaluation by C/Ps	1. Construction of access road to NUBIA, administration building, cargo terminal, waste treatment facilities, etc. is completed before the commissioning of NUBIA by the Mongolian side. 2. Staff training for human resource development is continuously carried out for NUBIA personnel by the Mongolian side. 3. Necessary procedures are smoothly taken by the competent authorities, esp. Ministry of Road and Transportation (MRT), on the establishment of O&M organization.
Output			
1. O&M organization is established based on O&M plan including staff allocation.	In accordance with the To Do List, 1-1 C/Ps' knowledge on O&M organization is increased. 1-2 Regulations, manual, etc. for O&M organization at NUBIA are prepared. 1-3 Organizational chart is prepared for NUBIA. 1-4 Staff are allocated and meet the quota	1. O&M organization plan including staff allocation 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	1. Laws and regulations concerning establishment of O&M organization are sufficiently consistent. 2. Necessary number of staff are assigned to O&M of NUBIA and continuously work on O&M activities.
2. Implementation capacity for revised maintenance plan of runways etc. at NUBIA is improved.	In accordance with the To Do List, 2-1 C/Ps' knowledge on maintenance of runway, etc. is increased. 2-2 Regulations, manual, etc. for maintenance of runway, etc. at NUBIA are prepared. 2-3 Maintenance plan of runway, etc. at NUBIA is documented. 2-4 Staff are well educated on maintenance of runway, etc.	1. Revised maintenance plan of Runways, etc. 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
3. Implementation capacity for newly developed O&M plan of fuel supply at NUBIA is improved.	In accordance with the To Do List, 3-1 C/Ps' knowledge on O&M of fuel supply system is increased. 3-2 Regulations, manual, etc. for O&M of fuel supply system at NUBIA are prepared. 3-3 O&M plan for O&M of fuel supply system at NUBIA is documented. 3-4 Staff are well educated on O&M of fuel supply system.	1. O&M plan on fuel supply system 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
4. Implementation capacity for newly established charge setting system and tenant management plan at NUBIA is improved.	In accordance with the To Do List, 4-1 C/Ps' knowledge on charge setting methods and tenant management is increased. 4-2 Appropriate charge system is installed at NUBIA. 4-3 Regulations, manual, etc. for tenant management at NUBIA are prepared.	1. Charge system 2. Tenant management plan 3. Project report 4. Evaluation by Japanese expert 5. Self-evaluation by C/Ps 6. Check List of the To Do List	
5. Implementation capacity for newly developed customer satisfaction (CS) plan for upgrading CS at NUBIA is improved.	In accordance with the To Do List, 5-1 C/Ps' knowledge on CS is increased. 5-2 Regulations, manual, activities for upgrading customer satisfaction (CS) at NUBIA are prepared. 5-3 Staff are well educated on CS improvement.	1. Operation plan for customer satisfaction (CS) 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
6. Implementation capacity for newly developed relocation master plan is improved.	In accordance with the To Do List, 6-1 C/Ps have deepened their understanding on necessary activities for preparation for airport relocation. 6-2 Staff and other necessary resources are appropriately allocated for airport relocation.	1. Relocation master plan 2. Project report 3. Evaluation by Japanese expert 4. Self-evaluation by C/Ps 5. Check List of the To Do List	
7. Capacity of CAAM is developed for provision of Air Navigation Services at NUBIA	7-1 Pre-operation Plan is developed, implemented and monitored. 7-2 Opening Day Plan is developed, implemented and monitored 7-3 Safety assessment by CAAM inspectors is completed for ATM and CNS. 7-4 At least 32 officers are rated for ATC at NUBIA. 7-5 At least 25 engineers are capable of maintaining CNS systems at NUBIA. 7-6 At least 6 engineers are capable of conducting flight inspection of IFPs. 7-7 Conventional IFPs for NUBIA are issued in AIP. 7-8 PBN IFPs for NUBIA are issued in AIP.	1. Project report 2. Evaluation by Japanese expert 3. Self-evaluation by C/Ps	

Activities	Inputs		Important Assumption
	Japanese side	Mongolian side	
<p>1-1 Review the present situation of O&M at Chinggis Khaan International Airport</p> <p>1-2 Learn the O&M mechanism as well as activities taken in Japanese airport(s) with some field visits</p> <p>1-3 Implement Action Plan for establishing O&M organization at NUBIA (including staff allocation)</p> <p>1-4 Conduct training on airport operation</p> <p>2-1 Review the present situation of maintenance of runway, etc. at Chinggis Khaan International Airport</p> <p>2-2 Learn the mechanism as well as activities taken in Japanese airport(s) in the field of maintenance of runway, etc. with some field visits.</p> <p>2-3 Implement Action Plan for maintenance of runway, etc. at NUBIA</p> <p>2-4 Conduct training in some priority fields in maintenance of runways, etc.</p> <p>3-1 Review the present situation of O&M of fuel supply system at Chinggis Khaan International Airport</p> <p>3-2 Learn the O&M mechanism as well as activities taken in Japanese airport(s) in the field of fuel supply system with some field visits</p> <p>3-3 Implement Action Plan for O&M in the field of fuel supply system at NUBIA</p> <p>3-4 Conduct training in some priority fields in O&M of fuel supply system</p> <p>4-1 Review the present situation of operation as well as profitability of Chinggis Khaan International Airport</p> <p>4-2 Learn the charge setting methods as well as tenant management taken in Japanese airport(s) with some field visits.</p> <p>4-3 Implement Action Plan for charge setting at NUBIA</p> <p>4-4 Implement Action Plan for tenant management at NUBIA</p> <p>4-5 Conduct training on tenant management</p> <p>5-1 Review the present situation of customer services at Chinggis Khaan International Airport</p> <p>5-2 Learn the mechanism as well as activities taken in Japanese airport(s) in the field of customer satisfaction (CS) improvement with some field visits</p> <p>5-3 Implement Action Plan for customer satisfaction (CS) improvement</p> <p>5-4 Conduct training on customer satisfaction (CS) improvement</p> <p>6-1 Review the procedures as well as the progress of preparation for startup and commissioning of NUBIA</p> <p>6-2 Learn the method as well as the activities taken in Japanese airport(s) in the field of airport relocation</p> <p>6-3 Implement Action Plan for airport relocation to NUBIA</p> <p>6-4 Provide overall coordination of airport relocation to NUBIA among related entities</p> <p>7-1 Pre-operation Plan</p> <p>7-1-1 Develop a draft Pre-operation Plan</p> <p>7-1-2 Learn practices of airport/ANS coordination in Japan (including training in Japan)</p> <p>7-1-3 Improve the Pre-operation Plan based on analysis on the draft</p> <p>7-1-4 Monitor progress of the Pre-operation Plan, and adjust if necessary</p> <p>7-2 Opening Day Plan</p> <p>7-2-1 Develop an Opening Day Plan</p> <p>7-2-2 Monitor progress of the Opening Day Plan, and adjust if necessary</p> <p>7-3 Safety Assessment</p> <p>7-3-1 Assess risk and occurrence of unsafe events associated with new services</p> <p>7-3-2 Develop safety measures for critical safety issues</p> <p>7-4 Training of ATC officers</p> <p>7-4-1 Develop training program for ATC officers</p> <p>7-4-2 Develop ATC Operation Procedures</p> <p>7-4-3 Conduct training on ATC Operation Procedures</p> <p>7-4-4 Conduct simulator and test-operation training</p> <p>7-4-5 Develop Rating Standard</p> <p>7-4-6 Implement rating of ATC officers</p> <p>7-5 Training of CNS engineers</p> <p>7-5-1 Develop training program for CNS engineers</p> <p>7-5-2 Develop CNS Maintenance Procedures</p> <p>7-5-3 Conduct training on CNS Maintenance Procedures</p> <p>7-5-4 Conduct On-the-Job Training of CNS engineers</p> <p>7-5-5 Develop Tentative CNS Maintenance Procedures</p> <p>7-5-6 Implement Tentative CNS Maintenance at NUBIA</p> <p>7-6 Training of Flight Inspection engineers</p> <p>7-6-1 Develop flight inspection procedures</p> <p>7-6-2 Conduct On-the-Job Training of Flight Inspection engineers</p> <p>7-7 Development of Flight Procedures for NUBIA</p> <p>7-7-1 Design instrument flight procedures (IFPs)</p> <p>7-7-2 Conduct grand validation</p> <p>7-7-3 Conduct flight calibration/validation</p> <p>7-7-4 Production of aeronautical charts for AIP</p>	<p>1. Dispatch of Japanese Experts</p> <p><u>Fields of Experts</u></p> <ul style="list-style-type: none"> - Organization planning / Airport operation - Airport facilities O&M planning - Pavement - Fuel supply system - Charge setting - Tenant management - Customer satisfaction (CS) improvement - Airport relocation - Coordinator - ANS Chief Advisor - ATC Training Expert - CNS Training Expert - Flight Inspection Expert - Flight Procedure Design Expert <p>2. Training in Japan</p> <p><u>Fields of Training</u></p> <p>Organization planning / Airport operation, Airport facilities O&M planning, Pavement, Fuel supply system, Tenant management, Customer satisfaction (CS) improvement, Management training on airport/ANS coordination for middle-class managers or key persons, ANS on-site practical work training for ATC officers, CNS engineers and Flight Inspection engineers</p> <p>3. Equipment</p> <p>Automated Flight Procedure Design System (Until end of March 2018)</p> <p>4. Cost</p> <p>Project assistant/interpreter</p>	<p>1. Assignment of Counterpart Personnel (C/P)</p> <p>a) Steering Committee for O&M (at management level)</p> <ul style="list-style-type: none"> - As the responsible organization for decision-making <p>b) O&M Team (at administration level)</p> <ul style="list-style-type: none"> - Organization planning /Airport operation - Airport facilities O&M planning - Pavement - Fuel supply system - Charge setting - Tenant management - Customer satisfaction (CS) improvement - Airport relocation <p>c) Selection of trainees</p> <p>d) ANS Pre-operation Working Group</p> <ul style="list-style-type: none"> - Pre-operation Planning Team - ATC Training Team - CNS Training Team - Flight Inspection Team - Flight Procedure Design Team <p>2. Training abroad</p> <ul style="list-style-type: none"> - ATC training <p>3. Provision of facilities for the Project implementation</p> <ul style="list-style-type: none"> - Office space - Office facilities etc. <p>4. Equipment</p> <ul style="list-style-type: none"> - Necessary equipment for the Project implementation - Flight inspection services for CNS equipment and PBN flight procedures <p>5. Local cost</p> <ul style="list-style-type: none"> - Cost for office space/facilities (including for electricity, water, telephone & communication, etc.) - Others (data, information, survey results, etc.) <p>6. NUBIA Operator</p> <ul style="list-style-type: none"> - NUBIA operator is established and implement Action Plans for O&M of NUBIA <p>7. FSS Operator</p> <ul style="list-style-type: none"> - FSS operator of NUBIA is established and implement Action Plan for O&M of FSS 	<p><u>Preconditions</u></p> <p>1. "The organizations found below are officially established in Mongolia, before the Project starts.</p> <p>a) Steering Committee for O&M (at management level)</p> <p>b) O&M Team (at administrative level)</p> <p>2. "Budget for the Project implementation is properly allocated by the Mongolian side, before the Project starts.</p> <p>3. Necessary facilities/equipment for the Project implementation are properly provided by the Mongolian side, before the Project starts.</p>