Chapter 6 – SCENARIO ANALYSIS

The decision support tool is desired to be used in military environments as well as in disaster relief and humanitarian aid environments. Therefore, two completely different scenarios are necessary to describe and to test the functions and the goals of the decision support tool (DST). As it is stated in Chapter 4, the intended DST will be used dynamically over a rolling horizon basis where the decision model equipped with all needed simulation infrastructure will be re-run as new data becomes available and existing databases are updated accordingly. At each iteration, the model will determine helicopter tasking based on the pending requests, the newly arriving requests and using the updated information about helicopters, crew, all other relevant resources and the already accomplished and non-accomplished tasks which have been previously planned. On the other hand, since the development of the prototype DST is not included within the scope of RTG SAS-045 and indeed it needs the establishment and the effort of another NATO RTG to be assigned by the SAS Panel, hopefully in near future, an operational DST is not available at the time of solving sample scenarios. Thus, one-time static solutions are obtained for both scenarios by considering the set of requests given in scenario descriptions as initial conditions.

6.1 DISASTER RELIEF AND HUMANITARIAN AID ENVIRONMENT

In disaster relief scenarios, different transportation tasks are to be executed, and the number of different helicopter types may be very high. The transportation tasks mostly required in such a scenario are:

- Air transport of medical and technical teams;
- Air transport of stocks;
- Air reconnaissance; and
- Casualty and medical evacuation.

The main problem in a disaster relief scenario is that the Air transport requests are always urgent. As new air transport requests arrive at the crisis management centers, re-planning of the tasking of the transport helicopters should be naturally done.

The following scenario is based on an earthquake disaster in TURKEY. The magnitude of the earthquake in the eastern part of TURKEY is recorded to be 7.2 on the Richter scale. Among the places most affected by the earthquake are ERZINCAN and SUSEHRI. It is reported that about 2000 buildings in ERZINCAN and about 500 buildings in SUSEHRI have collapsed and Erzincan Airport has become unusable. The casualties are estimated to be 3200 in ERZINCAN and 800 in SUSEHRI. A fleet of AS-532, UH-60, CH-47 and CH-53, in total 68 transport helicopters are available to execute multiple transportation tasks.

The government in TURKEY has formed a crisis center to coordinate disaster relief operations. The crisis center has decided to use helicopters as the main transportation asset to deploy personnel and material to and from ERZINCAN and SUSEHRI. In order to come up with a deployment plan, the crisis center has demanded information regarding casualties, rescue teams, medical people, military troops, food, medicine, blankets, tents, etc., from several governmental and non-governmental institutions and requested the OR team in the TGS HQ to determine a quick transportation plan. The OR team has gathered the information and summarized it to be used in deployment planning.

Figure 6.1: Operational Network on the Map.

6.1.1 Inputs of the Model

The availability of different types of helicopters at each node is given in Table 6.1. Each type of helicopter has known transportation capacity shown in Table 6.2.

Table 6.1: Number of Available Helicopters of Each Type at the Nodes

Number of Available Helicopters	NODE														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
AS-532	5	5			5	2				3	2			4	
UH-60	3	2			5					2			2		1
CH-47	2	2			5					2				2	
CH-53	2	3			5					4					

Table 6.2: Personnel and Material Carrying Capacities of Each Type of Helicopter

Helicopter Type	Personnel and material to carry			Total Weight Capacity (kg.)
	Personnel		Material (Medicine, Food, blankets, tents, etc.) (in kgs)	
	Passenger (troop, rescue team member, etc.) (in numbers)	Casualty (in numbers)		
AS-532	17	6	2000	2000
UH-60	14	4	1800	1800
CH-47	40	24	7200	7200
CH-53	35	24	5500	5500

Table 6.3: Demand and Supply Quantities of Personnel and Material at the Nodes (A – sign shows the demand value at the node.)

Node	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Passenger (in numbers)	50	70	0	0	100	50	20	0	–120	–400	100	20	20	60	30
Casualty (in numbers)									480	60					
Material (tons)	10	27	0	14	30	5	13	0	–65	–28	10	6	10	12	20

Table 6.4: Locations and Capacities of Hospitals at the Nodes

Node	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hospital Capacity					350	150		150		200	150		100	420	200

6.1.2 Scenario Solution for MODEL – C1

The solution is given in terms of the routes of the helicopters, where 24 helicopters are needed to complete this task. Helicopters depart from their initial locations and visit operation bases and demand nodes according to the assigned routes. Fuel consumption rates are taken as one per distance. The routes and transportation amounts are given in Figure 6.3 as it is explained in legend in Figure 6.2.

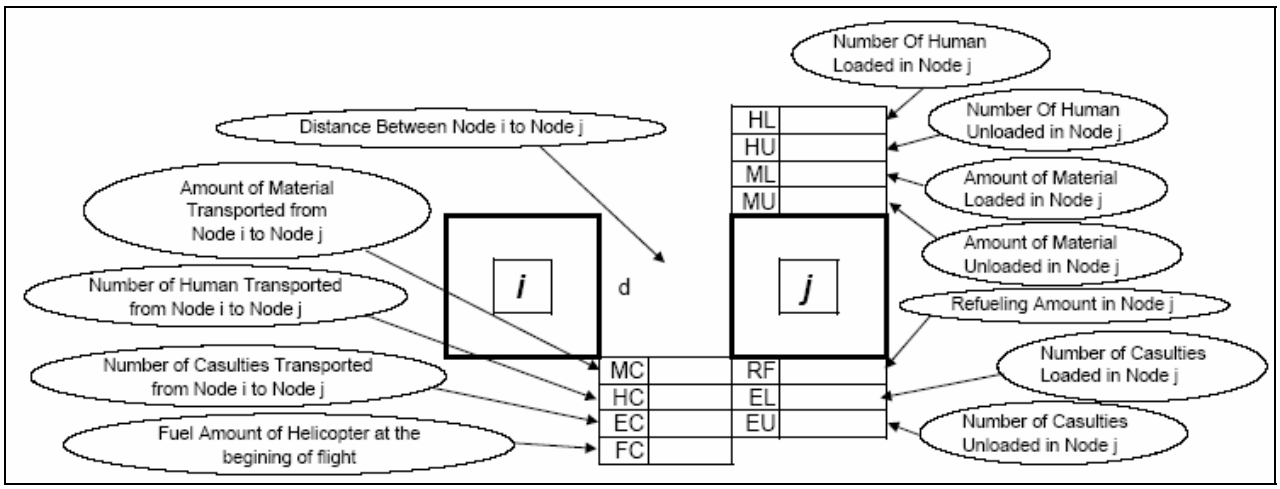

Figure 6.2: Legend for MODEL C1 Solutions.

TRANSAR NO:
NARAT NO:

Helicopter Type : AS-532 Number of Helicopters : 5
Initial Location : 5

HL	4		HL	2		HL	2		HL	0		HL	2		HL	0		HL	1		HL	0		HL	4		HL	2		HL	0		HL	0		HL	0
HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	14		HU	3		HU	0
ML	500		ML	500		ML	250		ML	100		ML	125		ML	50		ML	100		ML	125		ML	125		ML	125		ML	0		ML	0		ML	0
MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	625		MU	1,375		MU	0
5	d	453	**2**	d	565	**1**	d	546	**4**	d	327	**6**	d	194	**8**	d	340	**7**	d	232	**11**	d	230	**9**	d	150	**12**	d	188	**15**	d	324	**14**	d	151	**13**
RF	453	MC	500	RF	565	MC	1,000	RF	546	MC	1,250	RF	327	MC	1,350	RF	194	MC	1,475	RF	1615	MC	1,525	RF	0	MC	1,625	RF	0	MC	1,750	RF	0	MC	1,875	RF	0	MC	2,000	RF	0	MC	1,375	RF	0	MC	0	RF	0
EL	0	HC	4	EL	0	HC	6	EL	0	HC	6	EL	0	HC	8	EL	0	HC	10	EL	0	HC	10	EL	0	HC	11	EL	0	HC	11	EL	0	HC	15	EL	0	HC	17	EL	0	HC	3	EL	0	HC	0	EL	0
EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU		EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0
		FC	453			FC	565			FC	546			FC	327			FC	194			FC	340			FC	232			FC	230			FC	150			FC	188			FC	324			FC	151		

TRANSAR NO:
NARAT NO:

Helicopter Type : UH-60 Number of Helicopters : 4
Initial Location : 5

HL	3		HL	2		HL	2		HL	0		HL	1		HL	1		HL	1		HL	0		HL	3		HL	2		HL	0		HL	0		HL	0
HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	12		HU	2		HU	0
ML	450		ML	450		ML	225		ML	100		ML	113		ML	45		ML	90		ML	112		ML	113		ML	112		ML	0		ML	0		ML	0
MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	562		MU	1,238		MU	0
5	d	453	**2**	d	565	**1**	d	546	**4**	d	327	**6**	d	194	**8**	d	340	**7**	d	232	**11**	d	230	**9**	d	150	**12**	d	188	**15**	d	324	**14**	d	151	**13**
RF	453	MC	450	RF	565	MC	900	RF	546	MC	1,125	RF	327	MC	1,215	RF	194	MC	1,328	RF	1615	MC	1,373	RF	0	MC	1,463	RF	0	MC	1,575	RF	0	MC	1,688	RF	0	MC	1,800	RF	0	MC	1,238	RF	0	MC	0	RF	0
EL	0	HC	3	EL	0	HC	5	EL	0	HC	7	EL	0	HC	7	EL	0	HC	8	EL	0	HC	8	EL	0	HC	9	EL	0	HC	9	EL	0	HC	12	EL	0	HC	14	EL	0	HC	2	EL	0	HC	0	EL	0
EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0
		FC	453			FC	565			FC	546			FC	327			FC	194			FC	340			FC	232			FC	230			FC	150			FC	188			FC	324			FC	151		

TRANSAR NO:
NARAT NO:

Helicopter Type : CH-47 Number of Helicopters : 3
Initial Location : 5

HL	9		HL	5		HL	5		HL	0		HL	4		HL	0		HL	3		HL	1		HL	9		HL	4		HL	0		HL	0		HL	0
HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	34		HU	6		HU	0
ML	1,800		ML	1,600		ML	900		ML	360		ML	450		ML	180		ML	360		ML	450		ML	450		ML	450		ML	0		ML	0		ML	0
MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	2,250		MU	4,950		MU	0
5	d	453	**2**	d	565	**1**	d	546	**4**	d	327	**6**	d	194	**8**	d	340	**7**	d	232	**11**	d	230	**9**	d	150	**12**	d	188	**15**	d	324	**14**	d	151	**13**
RF	453	MC	1,800	RF	565	MC	3,600	RF	546	MC	4,500	RF	327	MC	4,860	RF	194	MC	5,310	RF	1,615	MC	5,490	RF	0	MC	5,850	RF	0	MC	6,300	RF	0	MC	6,750	RF	0	MC	7,200	RF	0	MC	4,950	RF	0	MC	0	RF	0
EL	0	HC	9	EL	0	HC	14	EL	0	HC	19	EL	0	HC	19	EL	0	HC	23	EL	0	HC	23	EL	0	HC	26	EL	0	HC	27	EL	0	HC	36	EL	0	HC	40	EL	3	HC	6	EL	13	HC	0	EL	0
EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	3	EU	0	EC	16	EU	16
		FC	453			FC	565			FC	546			FC	327			FC	194			FC	340			FC	232			FC	230			FC	150			FC	188			FC	324			FC	151		

Figure 6.3: Solution for MODEL – C1.

TRANSAR NO:
NARAT NO:

Helicopter Type : CH-47 Number of Helicopters : 2
Initial Location : 5

HL	4		HL	5		HL	1		HL	0		HL	2		HL	0		HL	1		HL	1		HL	3		HL	0		HL	0		HL	0		HL	0
HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	15		HU	2		HU	0
ML	1,700		ML	1,600		ML	950		ML	405		ML	397		ML	168		ML	630		ML	140		ML	760		ML	450		ML	0		ML	0		ML	0
MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	2,475		MU	4,725		MU	0
5	d	453	2	d	565	1	d	546	4	d	327	6	d	194	8	d	340	7	d	232	11	d	230	9	d	150	12	d	188	15	d	324	14	d	151	13

RF	453	MC	1,700	RF	565	MC	3,300	RF	546	MC	4,250	RF	327	MC	4,655	RF	194	MC	5,052	RF	1615	MC	5,220	RF	0	MC	5,850	RF	0	MC	5,990	RF	0	MC	6,750	RF	0	MC	7,200	RF	0	MC	4,725	RF	0	MC	0	RF	0
EL	0	HC	4	EL	0	HC	9	EL	0	HC	10	EL	0	HC	10	EL	0	HC	12	EL	0	HC	12	EL	0	HC	13	EL	0	HC	14	EL	0	HC	17	EL	0	HC	17	EL	3	HC	2	EL	13	HC	0	EL	0
EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	3	EU	0	EC	16	EU	16
		FC	453			FC	565			FC	546			FC	327			FC	194			FC	340			FC	232			FC	230			FC	150			FC	188			FC	324			FC	151		

TRANSAR NO:
NARAT NO:

Helicopter Type : CH-53 Number of Helicopters : 5
Initial Location : 5

HL	7		HL	5		HL	3		HL	0		HL	4		HL	0		HL	0		HL	3		HL	7		HL	6		HL	0		HL	0		HL	0
HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	0		HU	30		HU	5		HU	0
ML	1,360		ML	1,420		ML	650		ML	250		ML	356		ML	139		ML	274		ML	345		ML	211		ML	475		ML	0		ML	0		ML	0
MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	0		MU	1,725		MU	3,775		MU	0
5	d	453	2	d	565	1	d	546	4	d	327	6	d	194	8	d	340	7	d	232	11	d	230	9	d	150	12	d	188	15	d	324	14	d	151	13

RF	453	MC	1,360	RF	565	MC	2,800	RF	546	MC	3,450	RF	327	MC	3,700	RF	194	MC	4,056	RF	1615	MC	4,195	RF	0	MC	4,469	RF	0	MC	4,814	RF	0	MC	5,025	RF	0	MC	5,500	RF	0	MC	3,775	RF	0	MC	0	RF	0
EL	0	HC	7	EL	0	HC	12	EL	0	HC	15	EL	0	HC	15	EL	0	HC	19	EL	0	HC	19	EL	0	HC	19	EL	0	HC	22	EL	0	HC	29	EL	0	HC	35	EL	3	HC	5	EL	13	HC	0	EL	0
EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC		EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0	EC	3	EU	0	EC	16	EU	16
		FC	453			FC	565			FC	546			FC	327			FC	194			FC	340			FC	232			FC	230			FC	150			FC	188			FC	324			FC	151		

TRANSAR NO:
NARAT NO:

Helicopter Type : CH-47 Number of Helicopters : 5
Initial Location : 13

HL	30		HL	20		HL	0		HL	0
HU	0		HU	0		HU	50		HU	0
ML	6,000		ML	4,000		ML	0		ML	0
MU	0		MU	0		MU	10,000		MU	0
13	d	100	10	d	252	14	d	151	13

RF	503	MC	6,000	RF	0	MC	10,000	RF	0	MC	0	RF	0
EL	0	HC	30	EL	0	HC	50	EL	0	HC	0	EL	0
EU	0	EC	0	EU	0	EC	0	EU	0	EC	0	EU	0
		FC	453			FC	565			FC	546		

Figure 6.3: Solution for MODEL-C1 (Cont'd).

6.2 MILITARY ENVIRONMENT

In military environments, the tasks to be executed by transport helicopters are:

- Transport of Personnel;
- Transport of Material; and
- Casualty and Medical evacuation (CASEVAC and MEDEVAC).

In Joint and Combined NATO missions, air transport has to be requested by using the NARAT format as described in ATP 53. The reply of the approving authority is submitted in the TRANSAR format.

The following scenario is based on the exercise "EUROPEAN CHALLENGE". In this scenario, the Phase 2c of the military operation of the German Air Mobile Brigade 1 requires the air transport of two reinforced Infantry Coys and one Command Element. The troops are the Quick Reaction Force Tactical Reserve of the Air Mobile Brigade, one of which is equipped with light armoured vehicles. In Phase 2c of this scenario, their task is to gain and to secure 2 ELBE river crossings as precondition for the movement of the Main Forces (AUT and CZE Bde) to their AOR.

The Infantry Forces consist of 555 Soldiers and the following 99 light armored vehicles:

- 60 ESK;
- 13 Wiesel 2;
- 8 Wiesel 2 Mortar;
- 12 Wiesel 1 TOW; and
- 6 Wiesel 1 chain gun.

The troops are located in an Assembly Area 100 km south of BREMEN and need to be transported in one wave to their mission area at the river ELBE south of HAMBURG. The Airmobile Brigade is equipped with 32 NH-90 helicopters and is supported for this mission with one German battalion of 36 CH-53 helicopters, one Dutch battalion of 12 CH-47 helicopters and one battalion of 16 French PUMA helicopters. The decision support tool is expected to optimize the tasking of this multinational mixed helicopter fleet. The complete Air Transport Request is stated in 5 NARATs provided in Appendix 6.1. They are intended as the input for the decision support tool. For the sake of representational simplicity, the coordinates of the locations are labeled as given in Table 6.5.

Table 6.5: Location Legend

Location Label	Coordinates	
1	52 32 45 N	009 17 57 E
2	53 18 41 N	010 31 25 E
3	52 32 04 N	009 20 53 E
4	53 19 25 N	010 38 36 E
5	52 34 08 N	009 12 24 E
6	53 27 19 N	010 28 41 E
7	52 35 07 N	009 05 59 E
8	53 23 01 N	010 17 39 E
9	52 33 51 N	009 03 26 E
10	53 27 19 N	010 22 03 E
11	Assembly Area BREMEN	

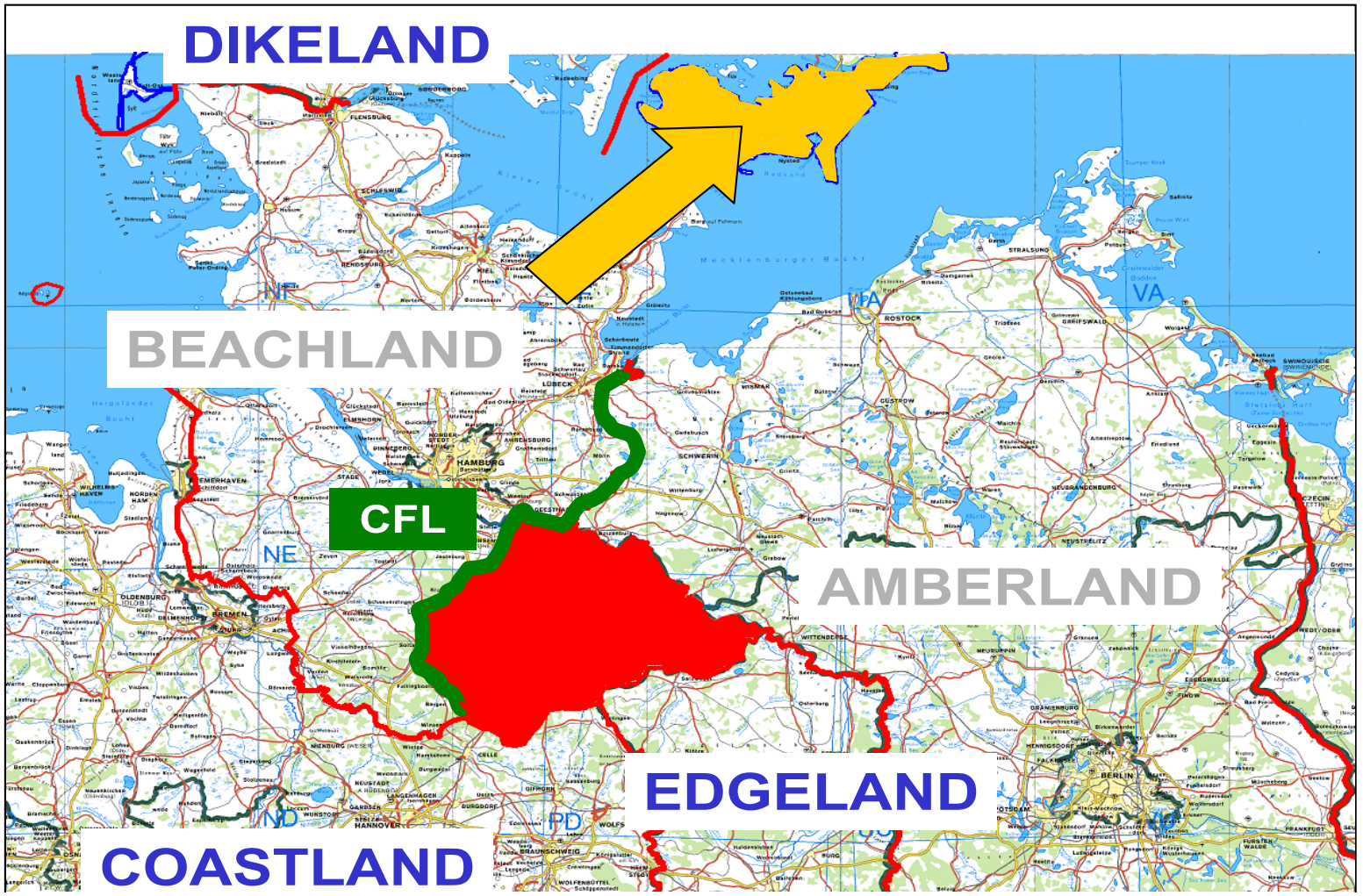

Figure 6.4: The Separation Map (The conflict parties Beachland and Amberland have to be separated by force. In the red area, a Demilitarized Zone has to be established by the forces. Coastland has offered Host Nation Support. Edgeland and Dikeland are neutral.)

Figure 6.5: Phase 2c of the Operation (In Phase 2c of the whole Operation, the Forces of the German Airmobile Brigade 1 have to gain and to secure 2 ELBE river crossings as precondition for the AUT and the CZE BDE to reach their AOR.)

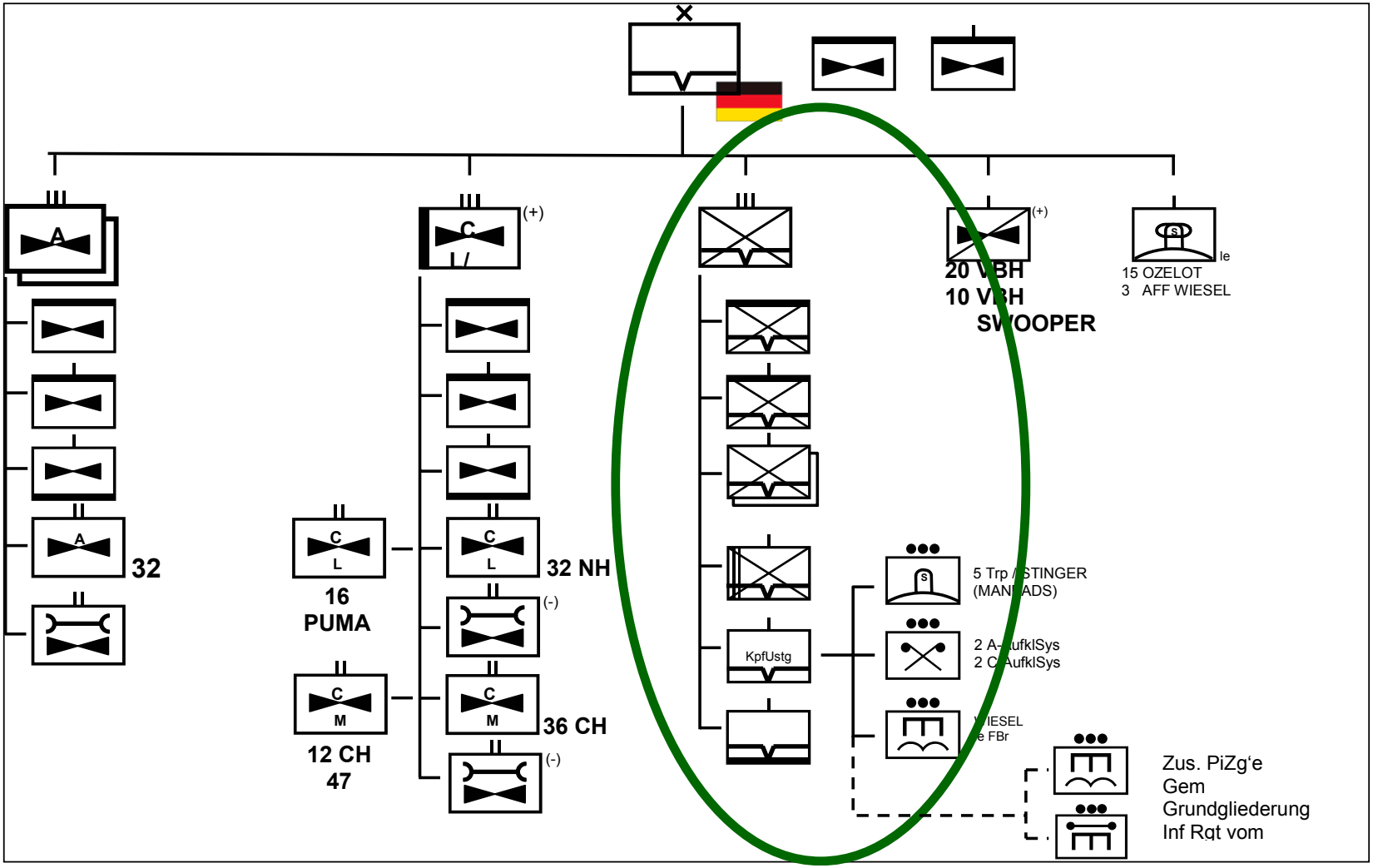

Figure 6.6: Elements of the InfRgt (Elements of the InfRgt are to be transported by helicopter to their mission south of Hamburg.)

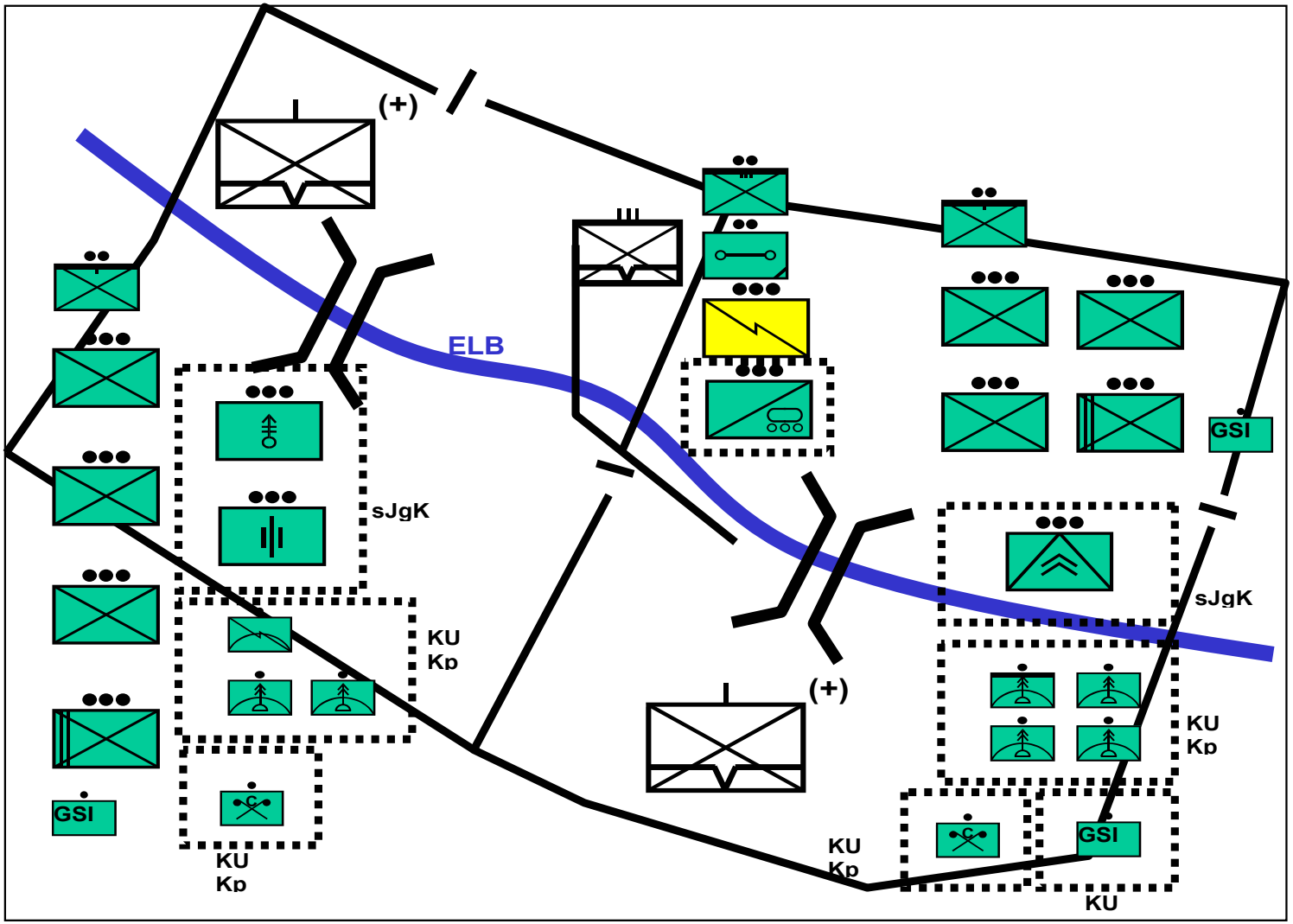

Figure 6.7: The Command Elements and Reinforced Coys (One Command Element and 2 reinforced Coys of the Infantry Regiment have to gain and to secure the ELBE river crossings.)

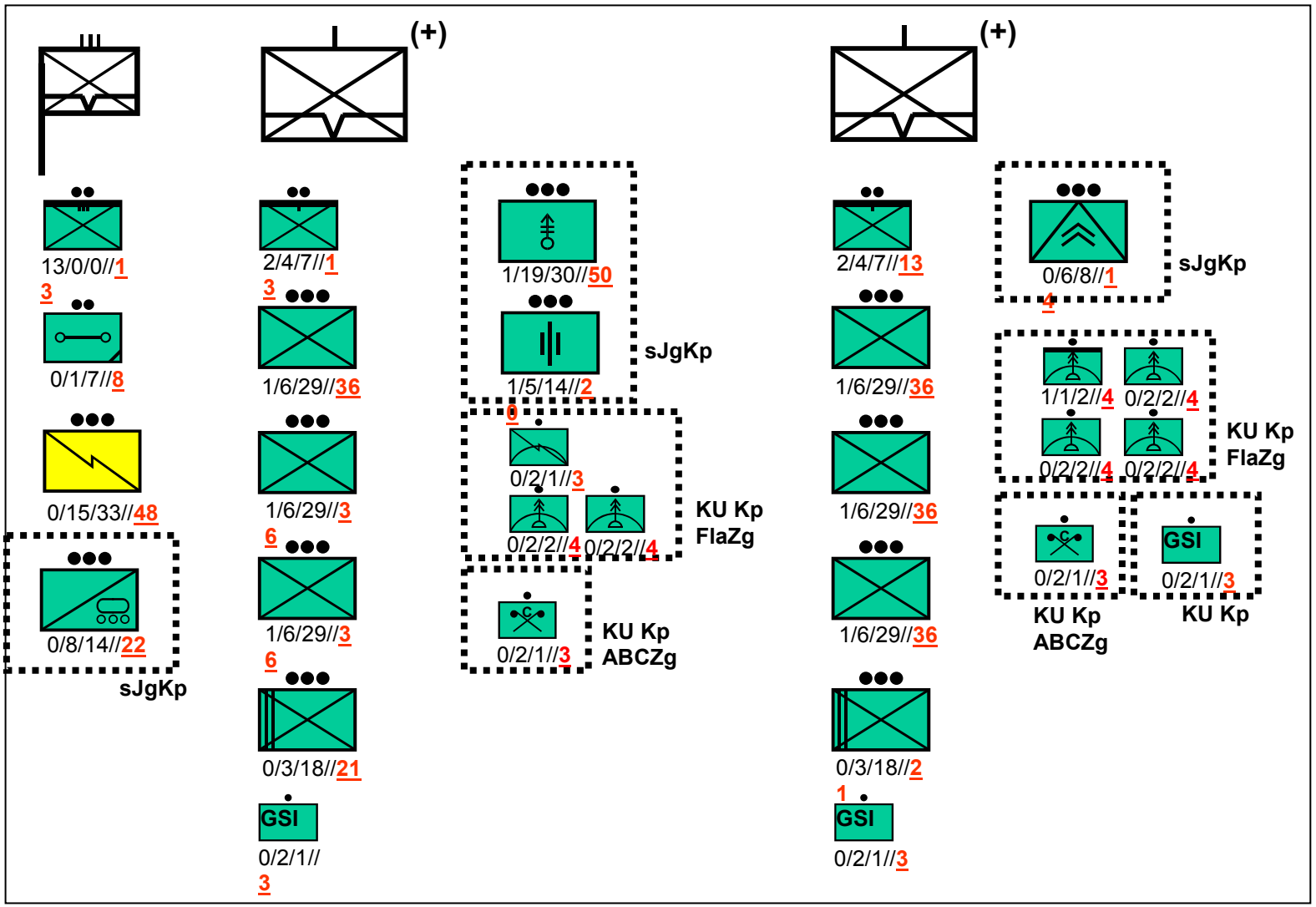

Figure 6.8: Soldiers to be Transported (Totally 555 Soldiers are to be transported.)

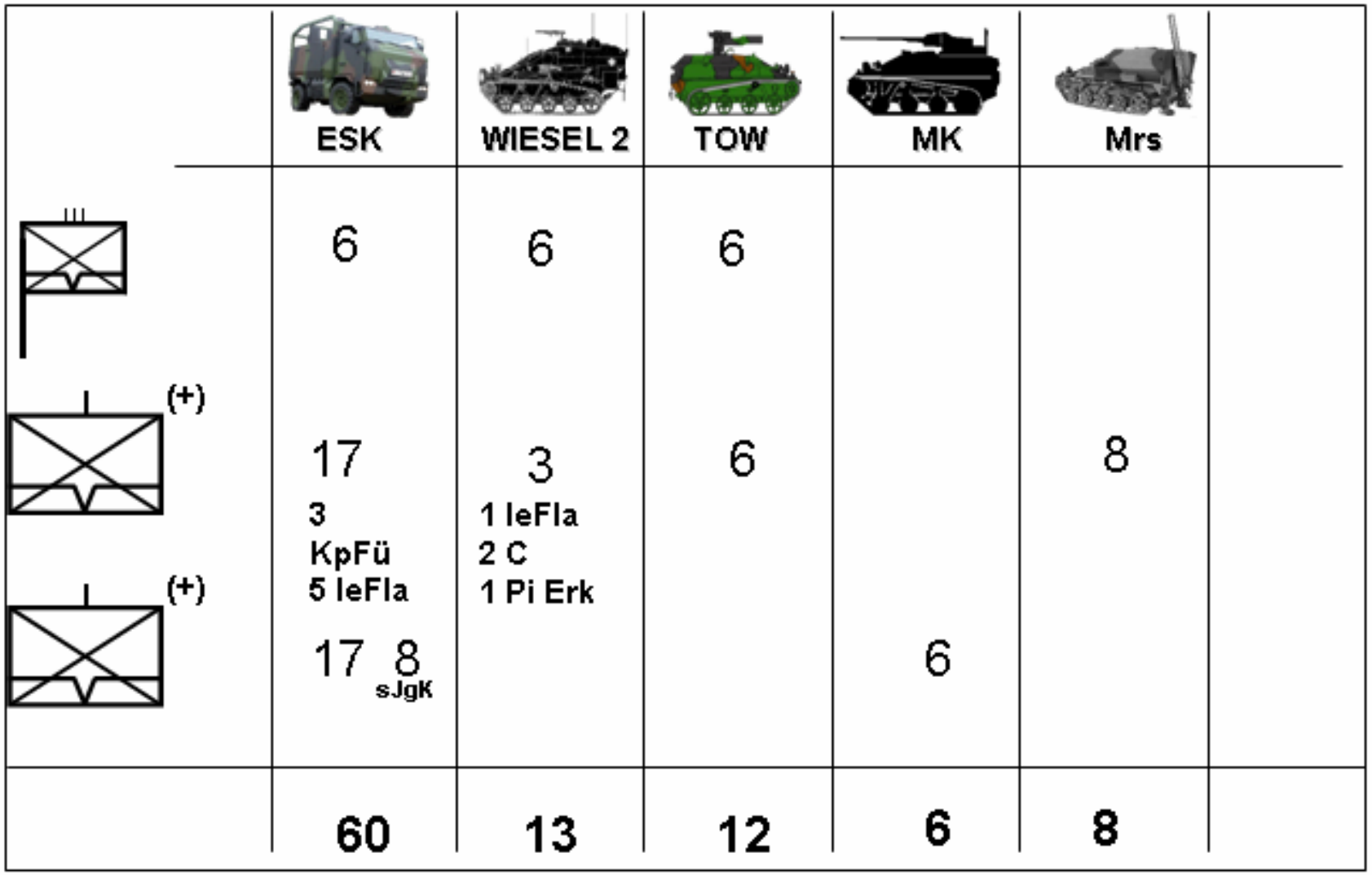

Figure 6.9: Light Armoured Vehicles (99 light armoured vehicles are to be transported in the first wave.)

The solution of the model provides the number of helicopters, their respective cargo quantities and the number sorties to execute the task orders given in NARATs where the objective function is selected to minimize the total number of sorties. The solution is given in Table 6.6, Figure 6.10 and Figure 6.11.

Table 6.6: Assignments to Helicopters

NARAT	Initial Node of N.	Final Node of N.	H. Type	# of H's	# of Sorties	Material Trans.	Human Trans.
1	1	2	NH-90	1	1	2,000	4
			CH-53	16	16	86,300	127
			PUMA	1	1	1,800	14
NARAT 1 – TOTAL				18	18	90,100	145
2	3	4	CH-53	5	5	27,500	36
			CH-47	9	12	86,300	-
NARAT 2 – TOTAL				14	17	113,800	36
3	5	6	NH-90	1	1	2,000	-
			CH-47	1	13	92,000	91
NARAT 3 – TOTAL				2	14	94,000	91
4	7	8	NH-90	28	28	56,000	-
			CH-53	1	1	5,500	-
			CH-47	1	4	28,600	145
NARAT 4 – TOTAL				30	33	90,100	145
5	9	10	NH-90	2	2	4,000	34
			CH-53	14	14	77,000	77
			CH-47	1	1	5,800	-
			PUMA	15	15	27,000	-
NARAT 5 – TOTAL				32	32	113,800	111

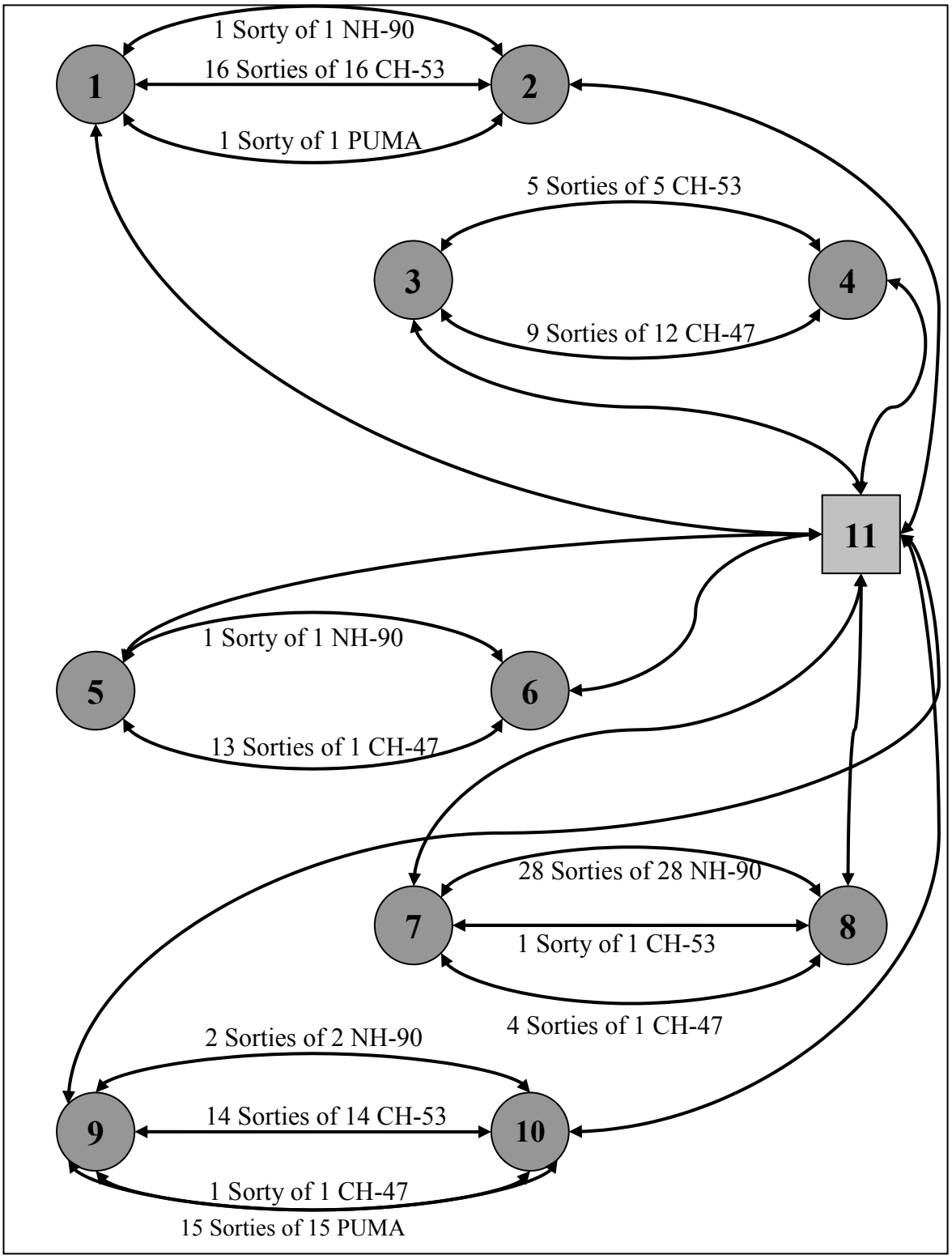

Figure 6.10: A General Overview of Helicopter Routes.

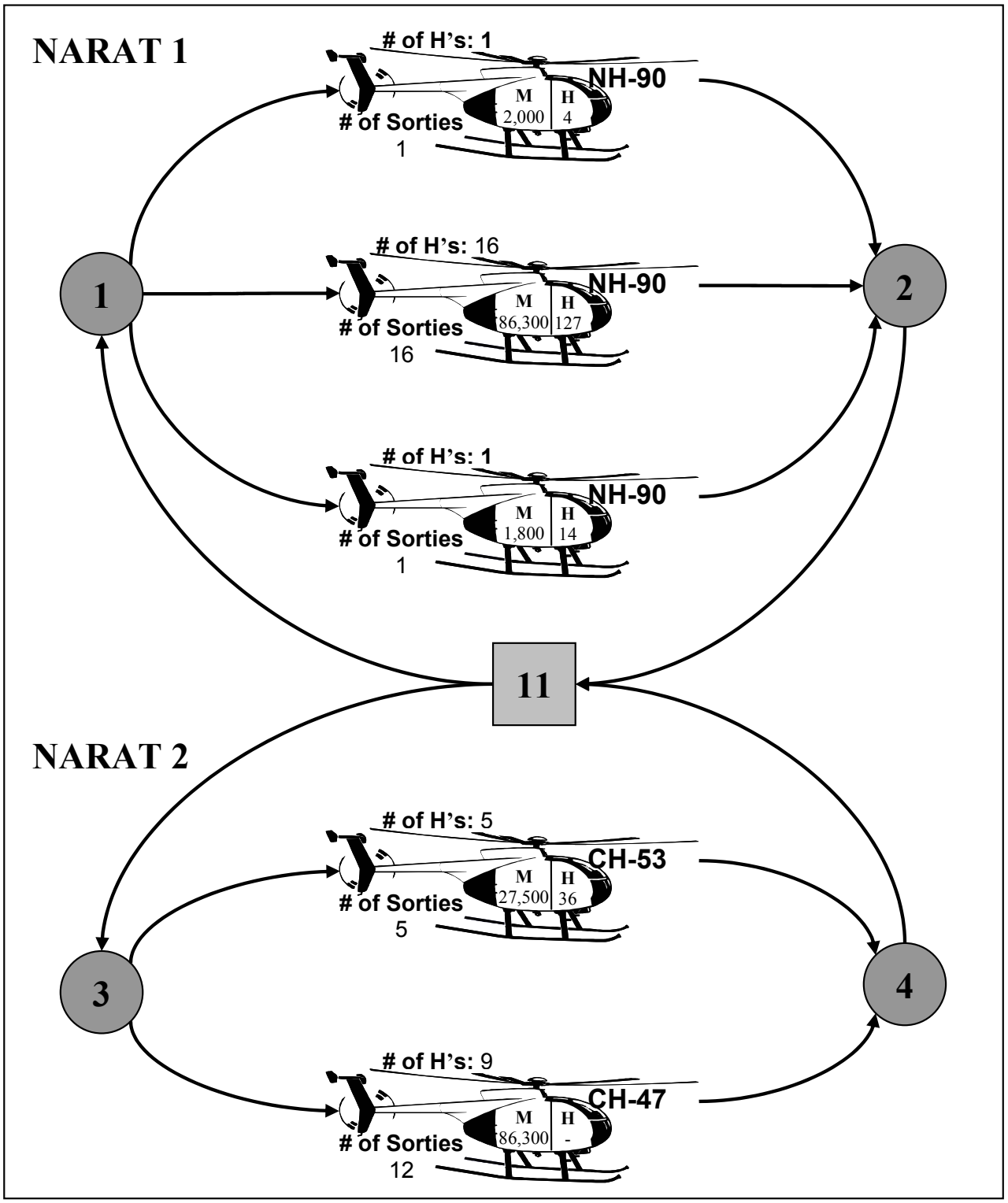

Figure 6.11: Routes and Transportation Details of Helicopters.

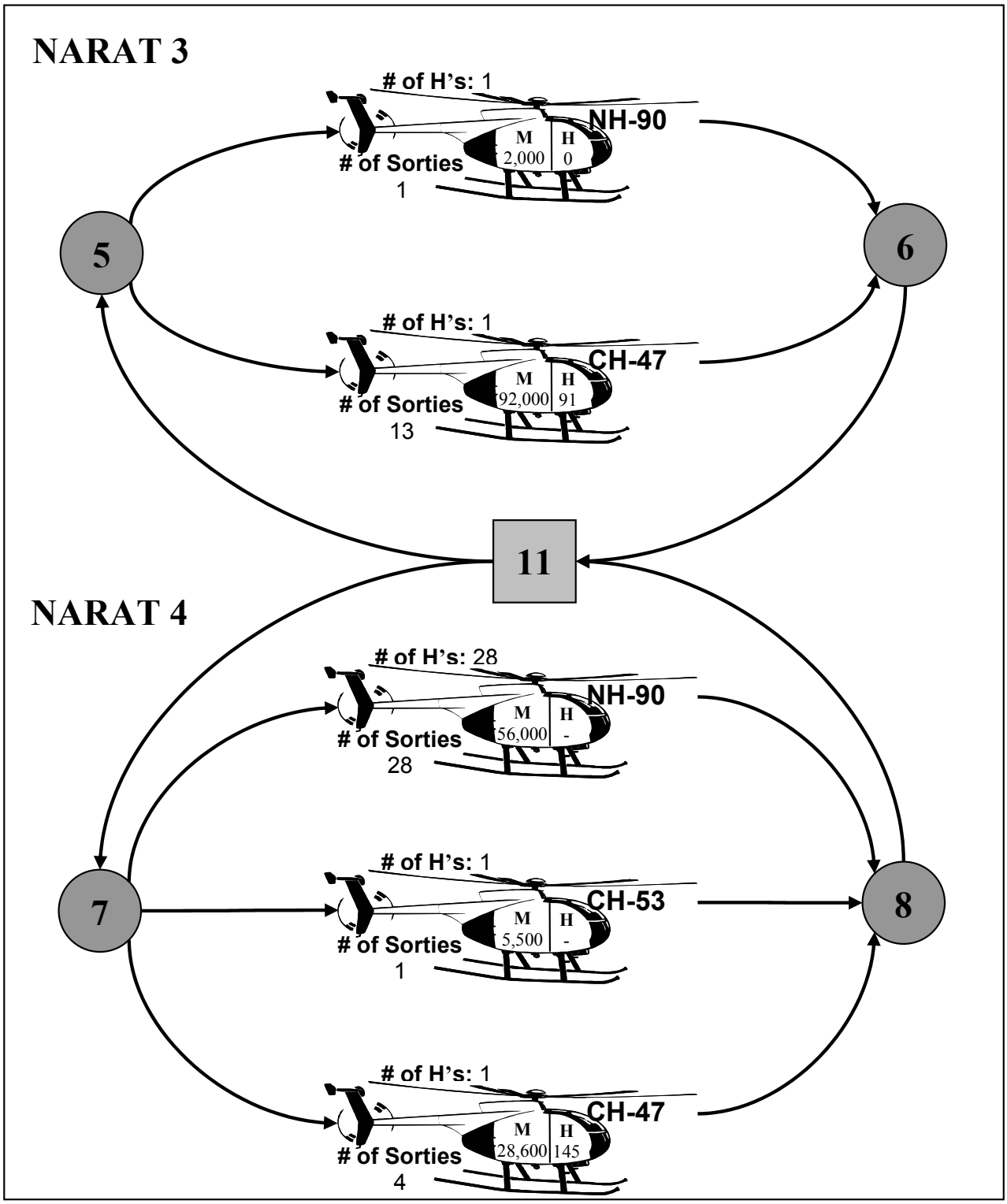

Figure 6.11: Routes and Transportation Details of Helicopters (cont'd).

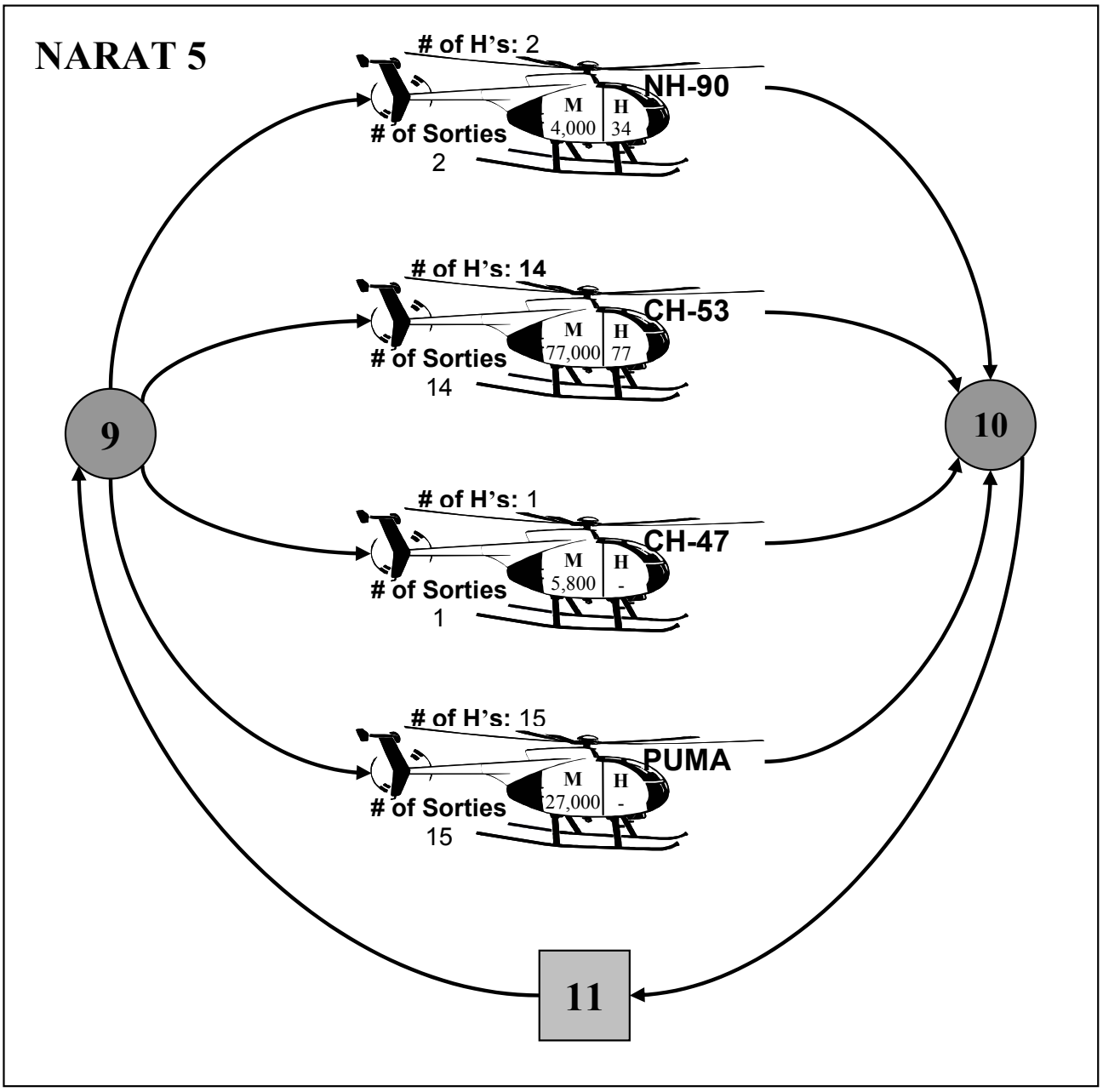

Figure 6.11: Routes and Transportation Details of Helicopters (cont'd).

Appendix 6.1 – NARATs

NARAT 1: 1 Coy InfRgt 062005

ONE		**Transport of Personal**
A.	145	Number of Persons
B.	21750 KGS	Total weight
C.	52° 35 07 N 009° 05 59 E	Coordinates of loading point
D.	53° 23 01 N 010° 17 39 E	Coordinates of de-loading point
E.	Land	Method
G.	10	Number of landing spots at de-loading point
H.	PAX are on the vehicles below	Remarks
TWO		**Transport of Material**
A.	90100 KGS	Total weight of Material
B.	NOST	Description of cargo
C.	1	Priority
F.	ESK: 5300 KGS	Weight
G.	ESK: 4,24 m	Length
H.	ESK: 1,85 m	Width
I.	ESK: 1,91 m	Height
J.	17 ESK	Number
	52° 35 07 N 009° 05 59 E	Coordinates of loading point
L.	53° 23 01 N 010° 17 39 E	Coordinates of de-loading point
O.	Land	Preferred Delivery Method
P.	TAC	Reason For Delivery Method
R.	10	Number of landing spots at de-loading point
THREE		**Transport of Casualties**
NIL		
FOUR		**Schedule**
A.	231945Z	No move before given time
B.	232030Z	Earliest delivery time at the landing site
C.	232115Z	Latest delivery time at the landing site
FIVE		**Communication**
A.	2 Coy InfRgt	Unit
B.	Tiger 2	Call signs
C.	121.375 P 221.00 S	Frequencies
D.	Voice	Mode

SIX		**Contacts**
A.	Onload	Type of Contact (Onload/Offload)
B.	HQ AMB	Location of Contact
C.	Cpt Meyer	Name and Rank
D.	0221 9371 2266	Phone

NARAT 2:1 Coy InfRgt 052005

ONE		**Transport of Personal**
F.	111	Number of Persons
G.	16650 KGS	Total weight
H.	52° 33 51 N 009° 03 26 E	Coordinates of loading point
I.	53° 27 19 N 010° 22 03 E	Coordinates of de-loading point
J.	Land	Method
I.	12	Number of landing spots at de-loading point
J.	PAX are on the vehicles below	Remarks

TWO		**Transport of Material**
D.	113800 KGS	Total weight of Material
E.	NOST	Description of cargo
F.	1	Priority
K.	ESK: 5300 KGS Wiesel 2: 4300 KGS Wiesel 2 MRS: 4300 KGS Wiesel 1 MK: 2800 KGS	Weight
L.	ESK: 4,24 m Wiesel 2: 4,153 m Wiesel 2 MRS: 4,153 m Wiesel 1 MK: 3,545 m	Length
M.	ESK: 1,85 m Wiesel 2: 1,852 m Wiesel 2 MRS: 1,852 m Wiesel 1 MK: 1,820 m	Width
N.	ESK: 1,91 m Wiesel 2: 1,752 m Wiesel 2 MRS: 1,752 m Wiesel 1 MK: 1,825 m	Height
O.	11 ESK 1 Wiesel 2 8 Wiesel 2 MRS 6 Wiesel 1 MK	Number
M.	52° 33 51 N 009° 03 26 E	Coordinates of loading point
N.	53° 27 19 N 010° 22 03 E	Coordinates of de-loading point

Q.	Land	Preferred Delivery Method
R.	TAC	Reason For Delivery Method
S.	12	Number of landing spots at de-loading point

THREE **Transport of Casualties**

NIL

FOUR **Schedule**

D.	231945Z	No move before given time
E.	232030Z	Earliest delivery time at the landing site
F.	232115Z	Latest delivery time at the landing site

FIVE **Communication**

E.	1 Coy Support InfRgt	Unit
F.	Tiger 3	Call signs
G.	122.175 P 223.100 S	Frequencies
H.	Voice	Mode

SIX **Contacts**

E.	Onload	Type of Contact (Onload/Offload)
F.	HQ AMB	Location of Contact
G.	Cpt Müller	Name and Rank
H.	0221 9371 2233	Phone

NARAT 3: 2 Coy InfRgt 062005

ONE **Transport of Personal**

K.	145	Number of Persons
L.	21750 KGS	Total weight
M.	52° 32 45 N 009° 17 57 E	Coordinates of loading point
N.	53° 18 41 N 010° 31 25 E	Coordinates of de-loading point
O.	Land	Method
K.	9	Number of landing spots at de-loading point
L.	PAX are on the vehicles below	Remarks

TWO **Transport of Material**

G.	90100 KGS	Total weight of Material
H.	NOST	Description of cargo
I.	1	Priority
P.	ESK: 5300 KGS	Weight
Q.	ESK: 4,24 m	Length
R.	ESK: 1,85 m	Width
S.	ESK: 1,91 m	Height
T.	17 ESK	Number
	52° 32 45 N 009° 17 57 E	Coordinates of loading point

O.	53° 18 41 N 010° 31 25 E	Coordinates of de-loading point
S.	Land	Preferred Delivery Method
T.	TAC	Reason For Delivery Method
T.	9	Number of landing spots at de-loading point

THREE **Transport of Casualties**

NIL

FOUR **Schedule**

G.	231945Z	No move before given time
H.	232030Z	Earliest delivery time at the landing site
I.	232115Z	Latest delivery time at the landing site

FIVE **Communication**

I.	2 Coy InfRgt	Unit
J.	Tiger 2	Call signs
K.	121.375 P 221.00 S	Frequencies
L.	Voice	Mode

SIX **Contacts**

I.	Onload	Type of Contact (Onload/Offload)
J.	HQ AMB	Location of Contact
K.	Cpt Berger	Name and Rank
L.	0221 9371 2254	Phone

NARAT 4: 2 Coy Support InfRgt 072005

ONE **Transport of Personal**

P.	36	Number of Persons
Q.	5400 KGS	Total weight
R.	52° 32 04 N 009° 20 53 E	Coordinates of loading point
S.	53° 19 25 N 010° 38 36 E	Coordinates of de-loading point
T.	Land	Method
M.	6	Number of landing spots at de-loading point
N.	PAX are on the vehicles below	Remarks

TWO **Transport of Material**

J.	113800 KGS	Total weight of Material
K.	NOST	Description of cargo
L.	1	Priority
U.	ESK: 5300 KGS Wiesel 1 TOW: 2800 KGS	Weight
V.	ESK: 4,24 m Wiesel 1 TOW: 3,545 m	Length

W.	ESK: 1,85 m Wiesel 1 TOW: 1,820 m	Width
X.	ESK: 1,91 m Wiesel 1 TOW: 1,825 m	Height
Y.	7 ESK 12 Wiesel 1 TOW	Number
P.	52° 32 04 N 009° 20 53 E	Coordinates of loading point
Q.	53° 19 25 N 010° 38 36 E	Coordinates of de-loading point
U.	Land	Preferred Delivery Method
V.	TAC	Reason For Delivery Method
U.	6	Number of landing spots at de-loading point

THREE **Transport of Casualties**

NIL

FOUR **Schedule**

J.	231945Z	No move before given time
K.	232030Z	Earliest delivery time at the landing site
L.	232115Z	Latest delivery time at the landing site

FIVE **Communication**

M.	2 Coy Support InfRgt	Unit
N.	Tiger 3	Call signs
O.	120.575 P 220.150 S	Frequencies
P.	Voice	Mode

SIX **Contacts**

M.	Onload	Type of Contact (Onload/Offload)
N.	HQ AMB	Location of Contact
O.	Cpt Meier	Name and Rank
P.	0221 9371 2249	Phone

NARAT 5: Cmd Group InfRgt 032005

ONE **Transport of Personal**

U.	91	Number of Persons
V.	13650 KGS	Total weight
W.	52° 34 08 N 009° 12 24 E	Coordinates of loading point
X.	53° 27 19 N 010° 28 41 E	Coordinates of de-loading point
Y.	Land	Method
O.	8	Number of landing spots at de-loading point
P.	PAX are on the vehicles below	Remarks

TWO		**Transport of Material**
M.	94000 KGS	Total weight of Material
N.	NOST	Description of cargo
O.	1	Priority
Z.	ESK: 5300 KGS Wiesel 2: 4300 KGS	Weight
AA.	ESK: 4,24 m Wiesel 2: 4,153 m	Length
BB.	ESK: 1,85 m Wiesel 2: 1,852 m	Width
CC.	ESK: 1,91 m Wiesel 2: 1,752 m	Height
DD.	8 ESK 12 Wiesel 2	Number
R.	52° 34 08 N 009° 12 24 E	Coordinates of loading point
S.	53° 27 19 N 010° 28 41 E	Coordinates of de-loading point
W.	Land	Preferred Delivery Method
X.	TAC	Reason For Delivery Method
V.	8	Number of landing spots at de-loading point

THREE		**Transport of Casualties**
NIL		

FOUR		**Schedule**
M.	231930Z	No move before given time
N.	232015Z	Earliest delivery time at the landing site
O.	232100Z	Latest delivery time at the landing site

FIVE		**Communication**
Q.	Cmd Group InfRgt	Unit
R.	Tiger 1	Call signs
S.	123.375 P 223.00 S	Frequencies
T.	Voice	Mode

SIX		**Contacts**
Q.	Onload	Type of Contact (Onload/Offload)
R.	HQ AMB	Location of Contact
S.	LTC Möllmann	Name and Rank
T.	0221 9371 2233	Phone