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Chief of Mission, Frankfurt
Attention: [redacted]

18 October 1954

Chief, Berlin Operations Base

Operational [redacted]

[redacted] Progress Report - 28 August through 17 October 1954

This document has been approved for release through the HISTORICAL REVIEW PROGRAM of the Central Intelligence Agency.
Date 1/8/95

Synopsis: Set out below is a progress report concerning developments in the [redacted] operation from 28 August 1954 through 17 October 1954. This dispatch contains no requests for action, all action requests being handled separately as they arise. It is primarily for the purpose of documenting progress and problems to date.

1. On 28 August 1954 the [redacted] detachment took over the site under the command of [redacted]. The basic shipment of equipment began arriving on the site on that date and was completely stowed by the end of the following day, 29 August. The period between 29 August and 2 September 1954 was consumed in shaking down in the new installation. On 2 September [redacted] and his crew began actual excavation. On 7 September the last of the necessary equipment arrived on the site and was securely unloaded and stowed.

2. On 8 September at approximately 8 feet below basement floor level, i.e., approximately 16½ feet below the surface of the ground, small amounts of water were encountered. This development was completely unanticipated inasmuch as all geologic and other data previously collected reflected that the water table in this area was at approximately 32½ feet. Further investigation reflected that immediately below the water there was a layer of heavy clay almost impervious to moisture which also was completely unanticipated since the geologic data had reflected that the soil composition in the area was composed completely of sand without either clay or rock formations. Pumps were procured and immediately placed into operation, and insofar as could be determined, the water flow was approximately 400 gallons per day in a hole 12 feet in diameter.

3. It being impossible for obvious reasons to conduct test borings outside the installation along the intended route of approach to the target, efforts were made to do as much testing as possible within the necessary limitations of security to, determine the exact significance of the water. A test bore hole was sunk at the other end of the warehouse installation which revealed a similar phenomenon, i.e., the presence of water and a clay layer, except that at that location, approximately 50 yards away, water was first encountered at 16 feet instead of 16½ feet. In the

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hole where the excavation was originally started and where water had been encountered at 16½ feet, test holes were bored down through the clay layer and a sump hole was sunk for approximately 8 feet additional depth for testing purposes. These test borings reflected that the clay stratum at that point was approximately 6 feet in thickness and that underneath it was located comparatively dry sand, indicating that the true water table was considerably below this point. An examination was made of the cesspool located approximately 50 feet beyond the far warehouse wall and the site of the original excavation, and it was determined that at that point water and the clay stratum apparently did not appear until a depth of approximately 22½ feet.

4. Insofar as it was possible securely to do so, a check was made of the location of water during the drilling of the well, which was completed during the construction period, approximately 30 - 40 yards northeast of the location where the original excavation was started by [redacted]. The record of the well drilling reflected that usable amounts of water were reached at approximately 33 feet. It will be recalled that in the immediate vicinity of the site are located a number of sand pits which on the basis of direct visual observation plus stereoscopic examination of aerial photographs had been estimated at 32 feet in depth. These pits which are in the immediate proximity of the site were again examined and determined to be dry to within a few inches of the bottom, despite recent heavy rains in the vicinity. To be absolutely positive of the depth of these pits, an altimeter was carried concealed to the bottom of one of them resulting in a reading of approximately 25 feet.

5. During this checking period from 8 until approximately 15 September 1954, the pumping of the water from the excavation continued steadily with only a very slight appreciable lessening of the water flow. While there was no indication thereof, the possibility was considered that since the outlet from the pumps was being piped into the cesspool system, the pumped out water could conceivably through some odd subterranean formation be flowing back into the excavation. Consequently, a quantity of phenothalein dye was procured and in alcohol solution mixed with the pumped out water. Tests over a period of several days clearly established that the pumped out water which had been mixed with phenothalein dye in solution was not flowing back into the excavation and therefore must have been draining off normally at cesspool level (22½ feet) or below.

6. On the basis of all of the above factors, the conclusion was reached that what had been encountered in the excavation was a perched water table caused by the presence of a clay lens approximately 6 feet thick but of unknown dimensions. It was considered probable also that this situation was aggravated by the fact that the summer of 1954 was an unusually rainy period in the area. While without test borings along the target line, which it is impossible to take, no one can be positive of this conclusion, it appears probable that the clay lens does not extend throughout the entire area. This was considered particularly probable in view of the depth of the adjacent sand pits, the fact that geologic data showed no extensive clay formation, and that the water and clay level in the concrete bottle of the cesspool, a short distance ahead of the original excavation, was approximately 6 feet deeper.



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Encountering a clay lens of limited proportions is not unusual, can seldom be predicted, and frequently cannot be forecast in a given area from available geologic data. The presence of clay lenses, particularly those not covering an extensive area, apparently occurs without rhyme or reason very much along the line of the old drillers' adage that "oil is where you find it." It is probable, however, that if clay strata exist under the entire area, the geologic data available would have given some indication thereof, which they did not. It was considered probable also that the clay lens slanted downwards beneath the surface in the direction of the target objective since it was approximately 6 inches higher at the back end of the warehouse and approximately 6 feet lower at the bottom of the concrete cesspool bottle.

7. The unanticipated discovery of water and the impervious clay lens underneath it raised a serious question as to exactly what construction approach should be used. As you will recall, we had originally intended to complete the construction with an overhead cover of approximately 9 feet; however, upon the initial examination of the site and upon determining from the first few feet of excavation that the sandy soil involved was extremely easy to work in, it was decided to drive considerably deeper and to operate with a cover of approximately 16 to 18 feet, which according to the water table level figures available to us would still have been several feet safely above the true water table. This was decided not only because of the ease with which the construction could proceed in the soil involved but also as an additional precaution to cut down the maximum amount of detectable noise. Approximately 8 to 9 feet of cover would still be possible above the 7 foot diameter tunnel as originally contemplated by driving the construction to the level where water was discovered unless the clay lens and the perched water table rise instead of drop, it being noted as set out above that every indication is that they would drop as the construction progressed. The other alternative is to cut through the clay lens, go underneath into the layer of sand above the true water table, and then drive the construction straight ahead. It is considered that two definite risks exist in this latter course, i.e., at some undetermined point in the future progress of the construction, a sharp drop out of the clay lens above the construction could cause a sufficient flow of water from the perched water table to raise a serious possibility of collapse; or, secondly, if by an absence, the clay lens continues to be present above the construction up to the point of reaching the target objective, it will be necessary to drive the construction and the terminal chamber up through the clay lens, which would cause serious construction problems, particularly if water still exists in a perched water table above the lens. A further complication results from the factthat careful survey of the proposed construction route from the site reflects that the terrain between the starting point of the excavation and the target point contains a definite dip estimated at between 5 and 6 feet over the approximately 1,500 foot target route. This dip or depression reaches its lowest point approximately halfway between the site and the target and rises gradually from that point to the target point.

8. On the basis of the above factors, the following conclusions were reached:

a. What had been encountered in the construction was a clay lens of limited but unknown dimensions approximately 6 feet in depth, sufficiently impervious to water to create a perched water table approximately 16 feet above the true water table.

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b. Below the clay lens there is present additional easy workable sand down to the true water table at approximately 32 feet.

c. On the basis of the test borings, the well data, the geologic data, and the water level in the cesspool concrete bottle, it is probable that the clay lens sinks gradually and perhaps drastically ahead of the original excavation and along the construction route and may, in fact, disappear altogether. In the absence of test borings, which it is impossible for security reasons to take, however, there is no absolute guarantee of this.

d. Initiating the construction by driving beneath the clay lens involves some risk of collapse or cave in if along the construction route a sudden drop off of the clay lens causes sufficient flow of water from the perched water table to saturate the surrounding sand.

e. If carefully done, construction can be effected along the top of the clay lens and the perched water table with sufficient cover that the project will not be detected through noise and will not run substantial risks of collapse or cave in. This was considered particularly advisable in view of the strong indications that the clay lens and the perched water table will sink as the construction progresses. The most serious drawback in driving the construction ahead on the top of the clay lens and the perched water table is the possibility that the clay lens will not sink or will rise again which would mean that when construction reaches a point midway between start and finish at the greatest depth of the terrain depression noted above, the construction would be operating with the benefit of only a few feet of cover which would compound the risk and make the noise factor an appreciable one.

f. At any point in the progress of the construction where the clay lens or the perched water table above it ceased dropping or appeared to rise, it would then be possible to cut through the clay lens and by use of well points, bore holes through the clay for drainage, etc., keep the tunnel dry and still continue progress at greater depth to afford adequate overhead cover without running any greater, if as great a risk of a sudden drop off and water flow as would be run if the construction were originally to begin below the clay lens.

9. On the basis of the above conclusions, it was tentatively decided that:

a. Construction should be commenced above the clay lens and should continue following the level of the clay lens and the perched water table toward the target and that if and as the perched water table and the clay lens dropped, the construction should drop along with them.

b. That at the point of reaching the depression midway between the starting point and the point of completion if the clay lens had not dropped sufficiently to afford the requisite overhead cover, the construction would then drive down through the clay lens taking maximum advantage of drainage pumps, well points, drainage borings through the clay lens, etc., to remove the water as a possible danger to the construction. (It should be noted that in the opinion of RHEALPHAY and his crew, this would be entirely possible and should involve no undue construction difficulties or risks.)

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c. In view of the unanticipated discovery of water and the problem of overhead cover created thereby, extreme caution would be used to reduce noise and to key the construction to our visual observation of possible countermeasures to the maximum degree possible.

10. Upon the completion of all of the above steps and upon reaching the above conclusions, this matter was discussed in detail by [redacted] and [redacted] with [redacted] of [redacted] who was requested to arrange for the immediate trip to Berlin of the [redacted] consulting engineer, [redacted] for the purpose of having [redacted] examine the site and add his technical opinion to that of [redacted] on the question of exactly how the construction should proceed. Unfortunately, [redacted] was not immediately available in view of other commitments, and one of his assistant engineers arrived in Berlin on 21 September to make a complete examination of the site and to discuss the attendant problems in detail with [redacted] tank engineer after completing this assignment returned to London on 22 September 1954, and on the night of 4 October 1954, [redacted] arrived in Berlin for a personal examination of the premises and discussions with [redacted] These were completed by the afternoon of 6 October at which time a detailed discussion of the operation and particularly of the construction approach that should be used took place between [redacted] and [redacted] findings and his analysis of the engineering construction factors, together with this discussion, confirmed completely [redacted] analysis and the original conclusions which had been reached, and at this meeting the following decisions were made:

a. Construction will proceed at the level immediately above the clay lens and the perched water table.

b. The excavation will be kept dry by continual pumping and as construction progresses, drainage holes will be bored through the clay lens and test borings regularly conducted to determine the exact depth of the clay lens and the perched water table.

c. The construction will follow the clay lens and the perched water table down as far as they recede, maintaining at all times a minimum overhead cover of 8 to 9 feet. If at any point in the progress of the construction the perched water table and clay lens rise or do not sink sufficiently to afford necessary cover, then the construction will drive into or through the clay lens in order that necessary cover will be possible.

d. The construction will be conducted with maximum caution to avoid detection through noise or through any unfortunate subsidence of the overhead soil.

e. Well point data is being procured and well points will be used to drain the soil ahead of the shield if it becomes necessary and advisable to do so.

11. As a result of these discussions, construction was recommenced on 11 October, and on 11 and 12 October the shield was emplaced and construction started at the level of approximately 16½ feet. The next several days up to 17 October were consumed in establishing the position of the shield and in driving the construction to and through the concrete foundation of the warehouse wall.



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12. Attached is one copy of a drawing made by [redacted] of the construction site which shows in exaggerated profile the depression which reaches its deepest point approximately halfway between the start of the construction and the target objective and which shows other pertinent terrain factors, including the known clay level at various points. Only one copy of this is available, and if it is desired by CDR to forward a copy of this to Headquarters, it is requested that copies be made by CDR since it is not desired to duplicate this drawing here. No copy of this drawing is being retained in BOB files.

13. In connection with the progress of this operation, the following additional steps have been taken in connection with general operational security and related factors which are of sufficient interest to be briefly summarized:

a. Twenty-four hour observation was instituted beginning on the day the site was taken over of the target area of the entire area between the site and the target and all movements of personnel and vehicles, including Vopo patrols in the neighborhood. A daily log is being kept of all movements and developments in this connection, including a pedestrian and vehicle count of traffic along the road adjacent to the target site. [redacted] crew has been supplied with a pair of 12 x 60 Leitz night binoculars and with an infra-red binocular viewing kit. Through the use of this equipment excellent night observation is possible and except on nights when there is heavy fog, it is believed it will be impossible for substantial activity to take place in the target area without our being aware thereof. The log which is being maintained is being periodically reviewed to be certain that there is no gradual change in traffic or observation patterns. There has been no indication of the use of infa-red light against us for observation purposes.

b. A considerable amount of interest, curiosity, and observation of the installation has been noted on the part of Vopos, apparent civilians, and individuals believed to be Russians in civilian clothes, but the interest exhibited and the observation noted do not appear to be more intensive or any more unusual than would normally be expected in connection with an installation of this type located where it is.

c. We have every indication that the cover story used has been effective, not only from the exterior appearances of the installation but from what we have been able to gather concerning the reaction in the Berlin Command to the installation. In fact, the acceptance of the installation in the role paraded for it has, we believe, been even better than we had hoped.

d. A careful review has been made of the guard system, the security precautions, and the preliminary instructions as to what is to be done in case of emergency, and they appear to be excellent. [redacted] has been furnished with two Schaeferhunden for warning and guard purposes. Emergency two-way radio communications are in the process of being set up. In addition, we are supplying [redacted] with microphone installations to be concealed on the fence which, it is believed, may pick up Vopo conversations in the immediate vicinity. On 15 September the premises were completely



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except for the presence of microphones, telephone taps, or other listening devices without detecting any indications of the presence of any such coverage. It is of interest to note that the three large diesel generators at the installation create such noise that it would be extremely difficult to install effective audio surveillance of any kind, and, in addition, create sufficient ground noise and vibrations to assist greatly in concealing construction noise.

g. Secure clandestine arrangements have been effected for contacts between [redacted] as necessary, and visits to the site by all individuals other than [redacted] assigned crew have been kept to an absolute minimum. All such visits that have been made have been made by the individuals concerned traveling to and from the site in a closed three-quarter ton truck where they have been subject to no outside observation whatever.

f. [redacted] his officers who as necessary proceed to downtown Berlin in civilian clothes have been issued short-barrelled 38 special revolvers for concealed carrying and through secure channels between COB and Heidelberg have been furnished permits therefor.

14. Considerable thought has been given to the problems involved in establishing a firm SOP for the action to be taken in the event of an unfortunate detection of this operation and the problems involved in the establishment, cover, and operation in Berlin of the proposed forward processing unit. These problems have been discussed in detail by [redacted] with [redacted] and also with [redacted] and C[redacted] COB. Specific recommendations concerning these two points will be made formally within the immediate future.

15. It is impossible to estimate with certainty the completion date of [redacted] phase of this project. Such an estimate depends too completely upon future contingencies to be exact at this point; however, [redacted] most conservative estimate at the present time is that he should complete his phase of this project by approximately 22 January 1955 unless we encounter the remote possibility that the clay lens and the perched water table sink instead of drop and do not disappear so that it is necessary to drive below them at or about the location where the depression midway between the site and target reaches its greatest depth. If that contingency does occur, the time for the completion of this phase of the project will be appreciably longer.

16. This is the first progress report that has been submitted on this operation since the occupation of the site on 28 August. Documentation of this operation is for obvious reasons being kept to the barest necessary minimum as previously discussed with [redacted] It was felt, however, that in view developments and the necessary construction decisions resulting therefrom, a progress report in some detail should be submitted at this time.

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