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CONSTRUCTION OF MAJOR IRRIGATION PROJECTS IN THE USSR, 1954-1955

[Comment: This report presents information on the construction of major Soviet irrigation projects, extracted from foreign-language newspapers and periodicals published October 1953-September 1955. The information is arranged according to republic.

Numbers in parentheses refer to appended sources.]

ARMENIAN SSR

Arzni-Shamiramskiy Irrigation Canal

In June 1954, the Arzni-Shamiramskiy Irrigation Canal, the largest such project in the Armenian SSR, was under construction. The water flowing through this canal will irrigate tens of thousands of hectares of fertile steppes which extend from the foothills of the Aragats Mountains. To help complete this project on schedule, members of the Komsomol of Armenia had been sent from cities and villages to work on the canal.(1) The "Armvodstroy" Trust [Armenian Irrigation Construction Trust] (chief engineer, P. Shagoyan) was in charge of construction.(2)

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AZERBAIJAN SSRSamur-Divichinskiy Irrigation Canal imeni I. V. Stalin

The Samur River forms a natural boundary between Dagestan and Azerbaydzhani. For centuries, it has emptied its waters into the Caspian Sea. Before World War II, the first section of the Samur-Divichinskiy Canal was built to supply water to the kolkhoses and sovkhoses located along its banks in the Azerbaydzhani SSR. (3)

The second section of the Samur-Divichinskiy Canal is 61 kilometers long. (4) The canal will provide irrigation for 15,400 hectares of land (3) and will be partly used to supply water to industrial enterprises in Baku. On the canal there will be two large pumping stations designed to pump water into the Dzheyran-Batan Reservoir, located 26 kilometers from Baku. (5) The water will be raised 10 meters in pumping it into the reservoir. (4) The reservoir will have a surface area of about 5 1/2 square kilometers and will hold 130 million cubic meters of water. (5) From the Dzheyran-Batan Reservoir, the waters of the Samur-Divichinskiy Canal will flow through the Novyy Asheronkiy (New Asheron) Canal to fields on the Asheron Peninsula. (6)

"Kura-Araksvedstroy" [Main Administration for Irrigation Construction in the Kura-Araks Lowlands] (chief, A. Bagranov) was scheduled to complete construction of the second section of the Samur-Divichinskiy Canal in 1954. (7) In July 1954, youths working in enterprises of Baku were responding to an appeal of the Komsomol to help with construction of the canal. (8) In September 1954, the builders were erecting dams, water intake systems, settling tanks, pumping stations, sluices, etc. (6) In August 1955, the second section of the Samur-Divichinskiy Canal was completed. (9) The Azerbaydzhani builders were helped by brigades of workers from "Kuybyshevgidrostroy" (Administration for Construction of the Kuybyshev Hydroelectric Power Station). (3) In all, over 150 hydraulic structures were built along the canal in addition to the two large pumping stations at the Dzheyran-Batan Reservoir. (5)

Kura-Araks Irrigation Canals Based on Mingechar Reservoir

At the end of May 1955, the first section of the Verkhne-Karabakhskiy (Upper-Karabakh) Canal went into operation. This 61-kilometer section of the canal extends from the Mingechar Reservoir to the Tertterchay River. The total length of the canal will be 173.6 kilometers, terminating near the Araks River. The second and third sections of the canal are to be completed before the end of the year so that the entire canal will be in operation in 1956. However, this will not mark the end of the work on the canal; various hydraulic structures and irrigation networks are scheduled to be built in 1956. Twenty-three water discharge structures are being built to supply water to 151,000 hectares of land. The canal will make it possible to improve the supply of water in irrigated lands of the Nil'skaya, Karabakhskaya, and Iyran'skaya Steppes. Water enters the canal from the Mingechar Reservoir via a tunnel drilled through the Buz-Dag Mountain Chain. The tunnel is over one kilometer in length and has a diameter of about 5 meters. It is anticipated that the flow of water at the head of the canal can be as much as 113.5 cubic meters per second. The flow of water into the canal will be automatically controlled from the main control board of the Mingechar Hydroelectric Power Station. (10)

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"Karabakhstroy" [Administration for Construction of the Karabakh Irrigation System] (chief, M. Sharif-zade; chief engineer, A. Vlasov) was scheduled to complete the Verkhne-Karabakhskiy Canal in 1954.(11) However, "Kura-Araksvodstroy" fulfilled the 1954 construction plan by only 80.8 percent, including the plan for construction of the Verkhne-Karabakhskiy Canal which was fulfilled [by "Karabakhstroy"] by only 72.5 percent.(12) Construction of the canal requires 13 million cubic meters of earthwork and 65,000 cubic meters of concreting.(13)

Construction of the Verkhne-Shirvanskiy (Upper Shirvanskiy) Irrigation Canal is provided for in the decree of the Council of Ministers USSR and the Central Committee CPSU, "Measures for Further Developing the Agriculture of Azerbaydzhan SSR in 1955-1960." In October 1954, the Ministry of Agriculture USSR approved the project proposal for construction of the Verkhne-Shirvanskiy Canal which will be one of the largest new irrigation canals in the complex system for irrigating the Kura-Araks Lowlands. To build the canal, 8 million cubic meters of earth will have to be removed.(14) The canal will be 122.9 kilometers long and will make it possible to irrigate 47,000 hectares of land and improve the supply of water to 65,000 hectares of land in irrigated areas. In all, there will be 40 sluices, 12 water discharge structures, 3 aqueducts, 2 waterfalls, ect. on the canal. In June 1955, "Mingechauresstroy" (Administration for Construction of the Mingechaur Hydroelectric Power Station) was building the head structure of the canal while construction administrations of "Kura-Araksvodstroy" were digging the canal.(15) The head structure is being built at the Varvarinskiy sector of the Mingechaur Hydroelectric Power Development and will consist of a spillway dam and a reservoir with a capacity of 5 million cubic meters of water. Both the Glavnyy Shirvanskiy (Main Shirvan) and Nizhne-Karabakhskiy (Lower-Karabakh) Canals, which will irrigate the Shirvanskaya, Muganskaya, and Karabakhskaya Steppes of Azerbaydzhan, will originate at this reservoir.(16)

GEORGIAN SSR

Mukhranskaya Irrigation System

On 17 October 1954, the first section of the Mukhranskaya Irrigation System was opened. Construction of the system was begun in May 1950. The main canals, totaling 75 kilometers in length, will irrigate 12,000 hectares of fertile land between the Aragvi and Ksani Rivers.

In building the Mukhranskaya Irrigation System, 1.8 million cubic meters of earthwork had been completed and 44,267 cubic meters of concrete and reinforced concrete placed, including over 17,000 cubic meters in the head structure (dam and water intake). Over 300 hydraulic structures had been built along the main and branch canals. On the Lami-Misaktsiyeli Canal, one of the main canals in the system, a hydroelectric power station was being built.

Construction of the system is under the direction of the Ministry of Water Resources Georgian SSR. N. Gabuniya is chief of construction of the Mukhranskaya Irrigation System, which is scheduled to be completed by the end of 1955.(17)

Samgori Irrigation System imeni Stalin

"Samgorvodstroy" [Administration for Construction of the Samgori Irrigation System] began construction of the Lower Main Canal in 1952, following completion of the Upper Main Canal. The Lower Main Canal skirts the city of Rustavi and extends into Gardabanskiy rayon. It receives water from the Tbilisi Reservoir.(18)

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In April 1954, the 13-kilometer section of the Lower Main Canal was completed and water began to flow through its channel which had been surfaced with concrete; 50,000 cubic meters of concrete and reinforced concrete had been placed in the Lower Main Canal, which is intended for irrigation of about 40,000 hectares of land.(19)

In August 1954, the Tbilisi Reservoir of the Samgori Irrigation imeni Stalin had reached the planned depth. The reservoir is located 5 kilometers from the Georgian capital.(20)

For construction of the Verkhne-Samgorskaya (Upper Samgori) Irrigation System in 1955, 18 million rubles were appropriated. This project will supply water to 5,000 hectares of land near Tbilisi.(21)

KAZAKH SSRArys'-Turkestan Irrigation Canal

In September 1954, construction of the Arys'-Turkestan Irrigation Canal in Yuzhno-Kazakhstanskaya Oblast was in progress. Construction of the canal, which will be 195 kilometers long, is expected to take 3 years.

The canal will originate near the confluence of the Syr-Dar'ya and Arys' Rivers. Water will flow by gravity for 50 kilometers to the Bugun' River, where the Bugun' Reservoir with a capacity of 370 million cubic meters of water will be created.(22) The reservoir will be 15 kilometers long and 5 kilometers wide in places.(23) From the reservoir, the canal will flow along the foothills of the Karatau Mountains toward the border of Kzyl-Ordinskaya Oblast to the city of Turkestan.(22)

Construction of the Arys'-Turkestan Canal will require 41 million cubic meters of earthwork, placement of 140,000 cubic meters of concrete and reinforced concrete, and installation of 1,500 tons of metal structural members. The canal, which will be the largest irrigation structure in Kazakhstan, will cross Arysskiy, Chayanovskiy, Shaul'derskiy, Turkestanskiy, and Frunzenskiy rayons, where the water will be used for cotton, grain, and fodder crops.(24) Of the 117,000 hectares of land to be irrigated by the canal, 45,000 hectares will be in cotton plantations.(23) Electrification of all five rayons through which the canal will pass is planned. For this purpose, two electric power stations with a combined capacity of 12,500 kilowatts will be built on the canal.(24) One of the hydroelectric power stations will be built at the Karaspanskaya Dam on the Arys' River where the canal originates.(23) It is estimated that the Arys'-Turkestan Canal, which is to be completed by 1957, will cost 250 million rubles.(25)

In October 1954, roads were being built from Badam Station on the Tashkent Railroad System to the Karaspanskaya Dam and the Bugun' River.(23) In December 1954, the site for the dam of the Bugun' Reservoir had been prepared; 160,000 cubic meters of earthwork had been completed. The dam is to contain 4.5 million cubic meters of hard earth and over 20,000 cubic meters of concrete.(26)

According to a speech of I. I. Tarasenko, deputy of the Supreme Soviet Kazakh SSR, delivered in March 1955, the Ministry of Water Resources Kazakh SSR was not providing this project with the necessary plans and specifications, construction materials, or technical equipment.(27)

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Kzyl-Ordinskaya Dam

Construction of the Kzyl-Ordinskaya Dam on the Syr-Dar'ya River near the city of Kzyl-Orda was begun before World War II. Work was interrupted by the war, but in 1946, was resumed and has been progressing slowly ever since. By September 1954, 3 million cubic meters of earth had been removed and 30,000 cubic meters of concrete had been placed at the dam construction site. The dam is designed to divert the waters of the Syr-Dar'ya throughout the year into the irrigation canals of Kzyl-Ordinskaya Oblast through left-bank and right-bank main canals, each about 150 kilometers long. Through the two canals will pass 360 cubic meters of water per second. The balance of the water will pass over the dam and continue to flow through the river bed of the Syr-Dar'ya. About one million hectares of land will be watered by the left-bank alone. (28) Construction of the Kzyl-Ordinskaya Dam will make possible irrigation of 2 million hectares of land. (29) In June 1955, the Kzyl-Ordinskaya Dam was nearing completion. The builders were striving to complete work on it by the 30th anniversary of the October Revolution [7 November 1955]. (30)

KIRGIZ SSR

Orto-Tokoy Reservoir and Bol'shoy Chuyskiy Canal

Together with the Bol'shoy Chuyskiy Canal, the Orto-Tokoy Reservoir will provide for irrigation of over 100,000 hectares of land in the Chu Valley. The reservoir will have a surface area of over 60 square kilometers. (31) It will be 16 kilometers long and 5 kilometers wide in places. The reservoir will hold almost 500 million cubic meters of water. Because the dam for the reservoir is being built in a seismic zone, none of the conventional construction materials (sheet piling, steel reinforcements, concrete, etc.) are being used. Instead, broken pieces of syenite rock found in the area are to be placed in the dam which will block the outlet at the lower end of the gorge where the reservoir is being created. (32)

In the winter of 1953-1954, work on the Orto-Tokoy Reservoir was suspended because of the severe weather. In 1954, a tunnel drilled through solid rock to divert the waters of the Chu River was to be completed so that work on the dam could proceed. (33) In November 1954, the dam had reached a height of 19 meters. (34) On 4 April 1955, the Chu River was finally diverted through the tunnel in the rocks. Meanwhile the dam had reached a height of 30 meters in places; about 1.5 million cubic meters of rock and earth remained to be placed in the dam. (31)

For technical reasons, the Bol'shoy Chuyskiy Canal is being built as two separate main canals, a western canal and an eastern canal. In May 1954, all basic construction work on the western canal, which is 140 kilometers long, had been completed. (35) On 1 May 1954, the permanent head structure of the western canal was completed. Prior to that date a temporary structure had been in use and the canal had become choked up with sand and gravel. The new structure prevents sand and gravel from entering the canal. (36) The western canal supplies water for irrigation of 20,000 hectares of land. When the Orto-Tokoy Reservoir is completed, the canal will carry enough water to irrigate 42,000 hectares of land. (37)

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In September 1954, the second section of the Bol'shoy Chuyskiy Canal, the eastern canal, was under construction. This canal will be about 100 kilometers long, extending to the city of Frunze. It will irrigate 36,000 hectares of land in Frunzenskaya Oblast. The large head structure of the canal is being built on the Chu River near the village of Chinkurgan. Excavators had begun to remove earth for the foundation of a reinforced-concrete dam which will divert part of the waters of the Chu River into the canal. The water will drop 150 meters in the first 6 kilometers of the canal. Construction of the first 10 kilometers of the canal had been completed.(38)

In June 1955, the builders had concreted the foundation of the dam. Forty kilometers of the canal had been dug. Almost 800,000 cubic meters of earthwork had been performed. Along the first 6 kilometers of the canal, the Kegetinskiy cascade was being created; electric power stations are to be built here at a future time. The Bol'shoy Chuyskiy Canal is one of the largest irrigation structures in Central Asia. Main and interkolkhoz irrigation canals together will be several thousand kilometers long. About 20,000 concrete and stone hydraulic structures will be erected along them.(39)

RSFSR

Terek-Kuma Irrigation System

Construction of the Terek-Kuma Irrigation System began in 1952. In all, the system will supply water to 1.5 million hectares of arid land and irrigate 140,000 hectares of land, including 120,000 hectares of meadows and pastures. In planning irrigation of the lowlands lying west of the Caspian Sea, it was decided to use the water of the Terek River in preference to the Volga since the former would flow by gravity while the latter would have to be pumped. The Terek-Kuma Canal will be easy to build since soil conditions along the route are favorable, there are no deep depressions, large ridges, or landslide areas, and the number of structures to be built is few. Parallel to the main canal an inspection road with a gravel surface is being built.(40)

The Terek-Kuma Canal will originate on the Terek River near the city of Muzdok. From here, the main canal will extend to the Kuma River with branches diverging and extending as far as the Caspian Sea. Total length of the canals will be about 1,000 kilometers.(41) The Terek River will completely supply the water needs of the Nogayskaya Steppe. The head structure of the Terek-Kuma Canal will consist of a reinforced-concrete dam, a settling basin, a hydroelectric power station, and a water-storage lock designed to discharge 200 cubic meters of water per second. The head structure will make it possible to take 2.8 billion cubic meters of water annually from the Terek River. Of this amount, 2 billion will be used to supply water to the Nogayskaya Steppe, while 800,000 million can be diverted to the Kuma River and stored in the Chograyskoye Reservoir for subsequent watering and irrigation of the chernozem. Water from the Terek River will be collected at stanitsa Pavlodol'skaya. The branches of the canal will be 25-30 kilometers apart. In the summer, water will be supplied to them in accordance with a graph and in the winter at a rate of 2-6 cubic meters per second. In the summer, when the maximum amount of water is needed for irrigation, water will be fed into the Kuma River at a rate of 10 cubic meters per second. From the main canal there will be six branch canals [source contains brief description of each] extending into the Nogayskaya Steppe.(40)

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In 1954, appropriations for construction were almost three times those of 1953. In February 1954, the main canal already had been dug through the Chokshaya Steppe and was deep in Stavropol'skiy Krai. (41) In July 1954, 53 kilometers of the 155-kilometer main canal between the Terek and Kuma Rivers had been dug. (42) In September 1954, excavators, scrapers, and bulldozers were at work near stanitsa Pavlodol'skaya digging the excavation for the reinforced concrete head structures of the Terek-Kuma Main Canal. Meanwhile, surveying parties were laying out the routes of the five right branches of the main canal which will extend eastward toward the Caspian Sea. (43)

Unusually warm weather in the Severo-Osetinskaya ASSR in the winter of 1954-1955 facilitated rapid construction of the gravity-flow Terek-Kuma Irrigation Canal. In January 1955, earth-removal machinery had passed the 60-kilometer mark in digging the main canal from the Terek River. (44) Another group of machines was digging the canal from the Kuma River end. Reinforced-concrete and earthen dams were being built on both the Terek and Kuma Rivers. The dam on the Kuma is to be completed by the end of 1955. (45)

Kuban'-Yegorlyk Irrigation System

The Kuban'-Yegorlyk System connects the Kuban' River, which abounds in water, with the dry channel of the Bol'shoy Yegorlyk. In 1948, the first section of the Kuban'-Yegorlyk Irrigation System, the 56-kilometer Nevinnomysskiy Canal, was built in Stavropol'skiy Krai. (46) The Nevinnomysskiy Canal supplies 1.6 billion cubic meters of Kuban' waters annually to the Bol'shoy Yegorlyk River. (47) In 1955, the second section of the irrigation system was being completed. This section consists of the Novo-Troitskoye Reservoir on the Bol'shoy Yegorlyk River and the Pravo-Yegorlyk Canal which, together with a left-branch canal, is 300 kilometers long. (48)

The Pravo-Yegorlyk Canal, which originates at the Novo-Troitskoye Reservoir, will supply water to 1.5 million hectares of land and irrigate 25,000 hectares. It will embrace eight rayons of Stavropol'skiy Krai and five rayons of Rostovskaya Oblast. In these areas, expenditures for water will decrease 27 million rubles annually. The Pravo-Yegorlyk Canal will pay for itself in 2 years of operation. (49)

Construction of the 123-mile Pravo-Yegorlyk Canal was completed in November 1954. (46) This canal irrigates 11,000 hectares of land. (46) In building this canal, 24 million cubic meters of earthwork were completed and 33,000 cubic meters of concrete and reinforced concrete were placed. (48) Construction of the 270-kilometer left-branch canal of the Pravo-Yegorlyk Canal was scheduled to begin as soon as the main canal went into operation. (49) The Pravo-Yegorlyk Canal terminates at the Bol'shaya Kugul'ska River. (50)

According to G. D. Oleshkevich, chief engineer of the Administration for Construction of Kuban'-Yegorlyk Irrigation System, the system is intended to provide electrification of villages and farms as well as to supply water. Two large rural hydroelectric power stations were under construction on the canal in early 1954. The Novo-Troitskaya GES, the largest automatically controlled rural hydroelectric power station in the Northern Caucasus, was scheduled to go into operation in May 1954. The planned capacity of this station is 4,000 kilowatts. (51)

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Kuban'-Kalaus Irrigation System

Surveying of the route of the new Kuban'-Kalaus Irrigation Canal was under way in Stavropol'skiy Kray in June 1954. This system will be one of the largest in the Northern Caucasus. It will originate on the upper reaches of the Kuban' River and will supply the central steppe region of the kray with 2.1 billion cubic meters of water annually. Near the village of Sultanskoye, Kursavskiy rayon, the main canal will divide into two branch canals, the Kuraskiy and Yankul'skiy, which will carry water to the chernozem. The combined length of these canals will be about 1,000 kilometers. The Kuban'-Kalaus System will supply water to 3 million hectares and irrigate over 200,000 hectares of fertile land in 21 rayons of Stavropol'skiy Kray. Together with the Kuban'-Yegorlyk and Terek-Kuma Systems, it will embrace the entire steppe area of Stavropol'skiy Kray.(52)

Central Volga Irrigation Systems

The head structures of the seven irrigation systems which "Sredvelgovodstroy" [Administration for Construction of Irrigation Systems in the Central Volga Region] was building in 1953 were to include dams and reservoirs. In the spring of 1953, the Chernovskoye Reservoir with a capacity of over 13 million cubic meters of water and the Talovskoye Reservoir with a capacity of about 6 million cubic meters were ready to receive the spring floodwaters. By November 1953, the earthen dam across the Teplovka River had been completed and work was continuing on the Teplovskoye Reservoir with a capacity of 18 million cubic meters of water. The earthen dam for the smaller Krutinskoye Reservoir had also been completed. During the winter of 1953-1954, concrete discharge structures and regulators were to be built at both reservoirs and the slopes of the dams were to be reinforced with stone. In the spring of 1954, these two reservoirs were to begin collecting water. Meanwhile, work on the dams of the Vetlyanskoye, Pikelyanskoye, and Borovskoye Reservoirs was continuing. In 1954, 10,000 hectares of land were to be irrigated from new reservoirs.(53)

In April 1954, three reservoirs, the Chernovskoye, Teplovskoye, and Talovskoye, were being filled with spring floodwaters. Construction of the first section of irrigation systems in the Central Volga region was to be completed by the end of 1954 so that 10,000 hectares of kolkhoz land could be irrigated in 1955. Construction of the [eighth and] largest irrigation system in the Central Volga Region, the Spasskaya system, was to begin in spring 1954. This system will supply water for 15,000 hectares of arid land.(54) The Spasskaya Irrigation System, which will originate on the left bank of the Volga near the village of Spasskoye, Kuybyshevskaya Oblast, will operate on electric power from the Kuybyshev Hydroelectric Power Station. The waters of the Volga will be pumped through main and branch canals to kolkhoz and sovkhos fields. On 1 June 1954, construction of the 17-kilometer Southern Main Canal of the Spasskaya Irrigation System had begun.(55)

In November 1954, 30 kilometers of main and distribution canals of the Talovskaya Irrigation System had been completed. The Talovskoye Reservoir contained about 4 million cubic meters of water. In 1955, the Talovskaya, Chernovskaya, and Krutinskaya Irrigation Systems were to go into operation.(56)

In May 1955, about 13 million cubic meters of water had accumulated in the Chernovskoye Reservoir (57), and in June 1955, the first section of the Chernovskiy Main Irrigation Canal went into operation. Construction of the Talovskiy and Teplovskiy Irrigation Canals was nearing completion.(58)

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Volgo-Akhtuba Irrigation System

"Stalingradvodstroy" [Administration for Construction of Irrigation Systems in Stalingradskaya Oblast] is creating a large irrigation system in Krasnoslobodskiy and Sredneakhtubinskiy rayons, the vegetable-growing rayons of Stalingradskaya Oblast. A 30-kilometer-long dike has been erected to protect the lands from spring floodwaters. A large head pumping station and four local pumping stations, all electrically operated, are being built, as well as a 50-kilometer main canal. The irrigation system will have about 20 million cubic meters of water stored. (59) Total length of the large irrigation system under construction in the fertile lands of the Volgo-Akhtuba River Valley will exceed 245 kilometers. (60)

Volgo-Don Irrigation System

The Volgo-Don Irrigation System is based on the Tsimlyanskoye Reservoir. This system will supply water to Stalingradskaya and Rostovskaya Oblasts.

The Don Main Canal which originates at the Tsimlyanskoye Reservoir is being built to supply water to the arid Zadonskaya, Manychskaya, and Sal'skaya Steppes. The canal will be able to supply 220 cubic meters of water per second. In 1952, the first section of the Don Main Canal went into operation. This 27-kilometer section supplies water to the Lower Don Canal for irrigating 65,000 hectares of land located on the left bank of the Don River in Rostovskaya Oblast. All the irrigated lands to the north of the Lower Don Canal (an area of 36,000 hectares) are irrigated by gravity, while water is distributed by pumping stations into the other lands.

As soon as a tunnel is drilled so that the Don Main Canal can be extended beyond the Sal River, water from the Tsimlyanskoye Reservoir will be supplied to the Bogayevskaya Irrigation System (44,000 hectares) and the Sadkovskaya Irrigation System (8,500 hectares). The Don Main Canal will irrigate directly another 8,000 hectares. "Rostovdonvodstroy" [Administration for Construction of the Don Irrigation System in Rostovskaya Oblast] is engaged in construction activities on these systems which are scheduled to be completed by the end of the Fifth Five-Year Plan.

Two dams across the Manych River will create the Veselovskoye and Proletarskoye reservoirs. The Manych Irrigation System will also receive Don waters. From the Veselovskoye Reservoir water will enter the Azovskiy Irrigation Canal which irrigates the lands surrounding the city of Rostov. (61)

The builders of "Rostovdonvodstroy" completed the 1954 annual works plan on 25 October with fulfillment of 10 million cubic meters of earthwork and placement of 10,000 cubic meters of concrete. (62)

In March 1955, drilling of the two parallel tunnels for the Don Main Canal where it crosses the ridge between the Sal and Don rivers and the Sal River itself had been completed. The builders were striving to have the tunnel ready to receive water in the second quarter of 1955. Meanwhile, "Rostovdonvodstroy" had only 25 more kilometers of open canal to build in construction of the Don Main Canal. (63) Also in March 1955, the Sadkovskiy and Bagayevskiy Irrigation

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Canals were approved by the acceptance inspection commission.(64) In April 1955, filling of the Lower Don, Sadkovskiy, and Bagayevskiy Canals was beginning. Repair of canals and hydraulic structures in the Azovskaya Irrigation System had been completed and the Veselovskaya Pumping Station had gone into operation following winter repair. Water pumped from the Veselovskoye Reservoir into the Azovskiy Canal had reached the 92-kilometer mark.(65)

In July 1955, "Rostovdonvodstroy" of the Ministry of Water Resources RSFSR was building the second section of the irrigation system, which will irrigate 60,000 hectares. In 1955, 15,000 hectares of land are to be irrigated from structures [newly] put into operation. Meanwhile, a large volume of earthwork and concreting remained to be done in construction of the 45-kilometer Don Main Canal and the tunnel was still being worked on.(66)

Among the irrigation systems of Stalingradskaya Oblast based on the water resources of the Don River are the Generalovskaya Irrigation System and the Varvarovskaya System. In September 1954, the Generalovskaya System, which will receive water directly from the Tsimlyanskoye Reservoir, was in the final stages of construction. Upon completion, it is to irrigate 12,100 hectares of land. The Varvarovskaya System, which will originate directly at the Varvarovskoye Reservoir of the Volgo-Don Canal, will irrigate 6,930 hectares.(61)

The main projects of "Stalingradvodstroy" in 1954 were the Generalovskaya and Karpovskaya Irrigation Systems which were to provide irrigation for over 17,000 hectares of land. The 54-kilometer main canal of the Generalovskaya System had been dug and various hydraulic structures as well as branch canals were being built. The Karpovskaya System was actually going into operation, water having been diverted to kolkhozes in Kalachevskiy and Gorodishchenskiy rayons.(67) Since the Generalovskaya Irrigation System is almost 60 meters higher than the Tsimlyanskoye Reservoir, two pumping stations were being built to raise the water. The builders were striving to complete the Nizhne-Yablochnaya Pumping Station and the 200 kilometers of distribution canals by November 1954 so that the Generalovskaya System could go into operation in spring 1955.(68) Following the commissioning of the Generalovskaya System, the Novokarskaya Irrigation System will be put into operation to provide irrigation of an additional 13,000 hectares of land.(69) Having completed the works plan for the first half of 1955 ahead of schedule, the builders of "Stalingradvodstroy" pledged in July to complete work on the Generalovskaya System and to provide irrigation of 5,700 hectares of land in the Varvarovskaya Irrigation System by 1 September.(66)

[Comment: The original decree of the Council of Ministers USSR on construction of the Volgo-Don Irrigation System provided that the work be completed in 1956.]

Irrigation System in Krasnodarskiy Kray

About 40,000 hectares in the lowlands along the Kuban' River have been set aside for a new reservoir in Krasnodarskiy Kray. The Kubanskoye Reservoir will contain 2.4 billion cubic meters of water, or one fourth of the annual flow of water in the Kuban' River. The reservoir is to be completed by 1959. To build this reservoir 130 million cubic meters of earthwork must be performed, 500,000 cubic meters of concrete placed, and more than 10,000 tons of structural metal installed. In September 1954, preliminary work was in progress.(70) In June 1955, the Petrovsko-Anastasiyevskaya Irrigation System went into operation on

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the lower reaches of the Kuban' River near stanitsa Slavyanskaya. It will water 2,500 hectares of fertile land reclaimed from marshes. This system is only part of a large-scale plan to expand the rice-growing area on the Puban' in Krasnoderskiy Kray. Next will be construction of the Mar'yano-Cheburgol'skaya and Zakubanskaya Irrigation Systems.(71)

TADZHIK SSR

In the past 25 years, the state has invested about 500 million rubles to aid peasants of the Tadzhik SSR in irrigation construction. In the next 5-6 years, over one billion rubles is being made available to meet the needs of irrigation construction in the republic. The length of irrigation canals is now approaching 10,000 kilometers.(72)

Dal'verzin Irrigation Canal

In September 1954, "Tadzhikgidrostroy" was at work on the new Dal'verzin Canal on the left bank of the Syr-Dar'ya River. The canal is to irrigate 16,500 hectares of virgin land in the Dal'verzhinskaya Steppe in the next few years.(73)

The Dal'verzin Irrigation Canal, which originates at the Syr-Dar'ya River near the Parkhadskaya Dam, will be 52 kilometers long.(74) It is a gravity-flow canal. By November 1954, the first 15 kilometers of the Verkhne-Dal'verzhinskiy (Upper-Dal'verzin) Canal had been built.(75) In all, 500,000 cubic meters of earth had been removed in building the canal. By pledging to complete the canal by the beginning of 1955 and have water flowing in it in spring 1955, the builders were trimming 2 years off the time allowed for construction by the government.(76) In May 1955, water was flowing through 40 kilometers of the Verkhne-Dal'verzhinskiy Canal.(77)

TURKISH SSR

Kara-Kum Canal

In all, the Kara-Kum Canal will extend 900 kilometers from east to west. It originates a little above the town of Kerki on the left bank of the Amu-Dar'ya and will pass by the cities of Mary and Tedzhen. From here the canal will turn to the northwest and follow the foothills of Kopet-Dag, through Ashkhabad, to the town of Bakharden. The canal, which will be 4-4.5 meters deep and will taper in width from 150 meters at the top to 50 meters at the bottom, is to be built in three sections: from the Amu-Dar'ya to Mary, from Mary to Tedzhen, and from Tedzhen to Bakharden.(78) Cutting across the Kara-Kum Desert, the canal will make it possible to supply water to about 5 million hectares of arid land.(79)

The Kara-Kum Canal will be navigable, linking such large cities as Mary and Tedzhen. Reservoirs and hydroelectric power stations will be built along the canal. The total length of irrigation systems based on the canal will be in the tens of thousands of kilometers. The canal is to flow by gravity over its entire length. Upon completion of the first section of the canal, 150 cubic meters of water per second will enter it from the Amu-Dar'ya. After the third

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and last section has been completed, 350 cubic meters of water per second will flow into the canal. The first water is scheduled to arrive in the cotton fields via the Kara-Kum Canal in 1957.(80)

In building the first section of the canal, 76 million cubic meters of earthwork must be performed and 25,000 cubic meters of concrete placed.(78) To build this section, about 58 million cubic meters of earth will have to be removed and about 11 million placed in dikes.(79)

The Kara-Kum Canal, the first section of which will be about 400 kilometers long, is the largest irrigation construction project in the Turkmen SSR. Water will enter the canal through the old Bassaga-Kerkinskiy Canal. It will flow through the Kelifskiy Uzboy [a series of depressions in the desert], where a reservoir containing 350 million cubic meters of water is being built. From the reservoir to Zakhmet Station, the canal proceeds through the Kara-Kum Desert for 200 kilometers. From Zakhmet Station, the canal cuts across a small desert and enters the irrigated zone above the city of Mary. The first section of the canal is to be completed in 1957. A motor road 410 kilometers long and a telephone line will be built along the canal. A strip, 20 to 40 meters wide, along the canal will be planted with large trees. Over 30 hydraulic structures and bridges, including two locks, will be built requiring 4,000 cubic meters of concrete and reinforced concrete. Settlements for construction and operating personnel will be built at Kerki, Mubary, Karakot-Hiyaz, Zakhmet, and Mary. The Soviet Government is investing more in the construction of the first section of the Kara-Kum Canal alone than has been spent for irrigation in the Turkmen SSR during the last 10 years.(81)

Basic work on the Kara-Kum Canal began in 1953.(82) In 1954, 135 million rubles were to be spent on construction of the first section of the canal scheduled for completion in 1956.(83) In all, 15 million cubic meters of earthwork were to be completed in 1954. As of May 1954, 3.6 million cubic meters of earthwork had been completed in construction of the canal. The 1954 works plan called for construction of a water intake and head structure at the Amu-Dar'ya, widening of the Bassaga-Kerkinskiy Canal, and erection of retaining walls in the Kelifskiy Uzboy. In 1954, over 10 million rubles were allocated for preliminary work on the Sary-Yezynskoye Reservoir on the Murgab River which will hold more water than all other reservoirs on the Murgab together.(82)

In 1954, the first section of the Kara-Kum Canal was being dug simultaneously from either end, from the Amu-Dar'ya River and from the delta of the Murgab River. From the Amu-Dar'ya end, excavation work was being performed by hydraulic machines which moved along with the water as they dredged, while from the other end excavators and scrapers were working in dry land.(84) Navigable locks are to be built on the Kara-Kum Canal at the head structure on the Amu-Dar'ya River, at the 50-kilometer mark, and at the 110-kilometer mark. In June 1954, there were 60 suction dredges, about 150 scrapers and bulldozers, many excavators, dump trucks, etc., at the disposal of the builders. A floating electric power station with a capacity of 1,500 kilowatts was being put into use.(85)

In all, about 1,000 young men and women were to be sent by the Komsomol to work on the Kara-Kum Canal.(86) "Karakumvodstroy" [Administration for Construction of the Kara-Kum Irrigation Canal] is in charge of construction.(87) In 1954, the volume of construction and installation work completed amounted to almost 45 million rubles more than in 1953.(88)

The 1955 works plan called for 13 million cubic meters of earthwork, 40,000 cubic meters of concreting, and the putting into use of 50,000 square meters of housing.(89) In January 1955, the builders of the "Turkmenhidrostroy"

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Trust, who were working out from Mary, had reached the 140-150 kilometer mark. The builders working from the other end had come 165 kilometers.(88) By July 1955, 20 million cubic meters of earthwork had been completed in construction of the Kara-Kum Canal. The waters of the Amu-Dar'ya had come through the canal one quarter of the way to the Murgab River.(90)

The first section of the Kara-Kum Canal must be ready by 1958. In September 1955, the Main Administration of Water Resources of the Ministry of Agriculture USSR was making surveys along the route of the second section, from the Murgab to Tedzhen, a distance of approximately 130 kilometers. Later, the third section of the canal will be built from the Tedzhen River to Archman Station on the Ashkhabad Railroad System, a distance of 300 kilometers.(91)

UKRAINIAN SSR

North Crimean Canal

In September 1954, the Ukrainian State Institute for Planning Irrigation Structures and Rural Electric Power Stations had completed the project proposal for construction of the North Crimean Canal which will supply water to 700,000 hectares and irrigate 107,000 hectares of land in the steppe regions of the Crimea and the southern part of Khersonskaya Oblast. The plan calls for construction of a main canal from the Kakhovka Reservoir to the city of Kerch'. Four large pumping stations, eight reservoirs, and about 100 different hydraulic structures, which are to be telemechanically controlled, are to be built. The canal will increase the area of irrigated lands in the steppe regions of the Crimea by more than five times.(92)

Salgir Irrigation System

In the valley of the Salgir River [Krymskaya Oblast], "Ukrvodstroy" [Administration for Construction of Irrigation Systems in the Ukrainian SSR] is building the Simferopol'skoye Reservoir. The dam extending across the Salgir River Valley will have a maximum height of 42 meters and will be 260 meters wide at the base.(93) In all, 1,250,000 cubic meters of earth are to be placed in the dam. The reservoir will have a surface area of 400 hectares (94) and a capacity of 36 million cubic meters of water.(95) The Salgir Irrigation System will irrigate over 10,000 hectares of land in Simferopol'skiy and Oktyabr'skiy rayons of Krymskaya Oblast.(94)

Construction of the Salgir Irrigation System, which is scheduled to go into operation in the Fifth Five-Year Plan, began in 1951.(96) By May 1954, the dam was 17 meters high and contained 570,000 cubic meters of earth and stone.(95) The builders pledged to complete the hydraulic development in 1954 and begin filling the reservoir, which will extend along the Salgir Valley from the southern boundary of Simferopol' to the village of Lozovoye almost 7 kilometers away. In October 1954, the earthen dam reached over 500 meters across the Salgir River Valley.(98) In January 1955, the Simferopol'skoye Reservoir was being filled with water. The level was rising by more than a meter per day.(99) By March 1955, 13 million cubic meters of water had accumulated in the reservoir. In places, the dam had reached a height of 22 meters.(100)

Kamenskiy Pod Irrigation System

There are to be three irrigation systems in the Kamenskiy Pod area. In January 1954, the Kamenskaya System was in operation, while the Ivanovskaya and Blagoveshchenskaya Systems were still under construction.(101)

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During the winter of 1954-1955 the builders of the Kamenskaya System were preparing to put the Ivanovskaya and Blagoveshchenskaya Systems into operation, thereby providing irrigation for 14,000 hectares of land. It had recently been decided to put the two canals into temporary operation. In 2 years, 400 kilometers of canals had been built.(4)

Krasnoznamenskaya Irrigation System

In September 1954, construction of the main canal of the Krasnoznamenskaya Irrigation System had begun in Khersonskaya Oblast near the zone of the future Kakhovka Reservoir. The main canal, 150 kilometers long and 120 meters wide at the surface, will supply water from the Kakhovka Reservoir to 63,500 hectares of land on the left bank of the Dnepr. Together with the other three irrigation systems under construction in Khersonskaya Oblast, the Nizhne-Ingulets, the Serogozskaya, and the Kakhlovskaya, it will irrigate 136,500 hectares of land.(102)

Ingulets Irrigation System

The Ingulets Irrigation System, the largest in the Ukraine, is being built on the vast Black Sea plains between the estuary of the Bug River, the lower reaches of the Dnepr, and its tributary, the Ingulets River. In spring 1956, 60,000 hectares of fertile land in Nikolayevskaya and Khersonskaya Oblasts are to be irrigated by this system which will contain a network of canals totaling almost 2,200 kilometers in length and having about 5,000 hydraulic structures.(103) In addition to the 60,000 hectares which will be irrigated, the Ingulets Irrigation System will supply water to 120,000 hectares of steppe lands in Nikolayevskaya and Khersonskaya Oblasts.(104)

A large pumping station on the bank of the Ingulets near Snigirevka will cause the waters of the shallow Ingulets to flow backwards. When the station is in operation, the level of the Ingulets River will be much lower than that of the Dnepr. Tremendous suction in the channel of the Ingulets will draw the waters of the Dnepr to the pumping station exactly as if through a tremendous pipeline almost 90 kilometers long.(103)

Early in 1954, the builders of the Ingulets Irrigation System pledged to supply water from the Dnepr River to the arid fields of the southern Ukraine in spring 1955. In February 1954, a surveying expedition of the Ukrainian State Institute for Planning Irrigation Structures and Rural Electric Power Stations had completed work in determining the location of the distribution canals of the Nizhne-Inguletskaya (Lower-Ingulets) Irrigation System which will irrigate 20,000 hectares of land.(106) At the same time, all earthwork on the first section of the main and distribution canals of the Verkhne-Inguletskaya (Upper-Ingulets) Irrigation System had been completed. In all, 8 million cubic meters of earthwork had been performed. For 1954, 4.5 million cubic meters of earthwork was planned. The large pumping station was under construction near Snigirevka. This pumping station will pump 2.5 million cubic meters of Dnepr waters per day to a height of 60 meters through two pipelines with a diameter of nearly 3 meters each.(107) In spring 1954, a group of suction dredges were scheduled to arrive at the Ingulets and dredge about 3 million cubic meters of earth from the bottom of the Ingulets between Snigirevka and its confluence with the Dnepr. Modern villages had been built at Kiselevka, Konstantinovka, and Novo-Petrovka where operating sectors of the irrigation system will be located.(105)

In June 1955, installation of the first three vertical centrifugal pumps began at the Snigirevka Pumping Station. In all, seven such pumps will be installed, making it possible to pump about 120,000 cubic meters of water per hour to a height of 65 meters. In 1955, the first section of the pumping station, consisting of four units, must go into operation.(108) In construction of the Ingulets Irrigation System, 25 million cubic meters of earth have been removed. Testing of the canal is to be carried out in 1955.(109)

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Severnny Donets-Donbass Canal

The population, enterprises, and farms along the Donets River use its water lavishly. All the rest of the Donets area, with the densest population in the Soviet Union, numerous towns and villages, and highly developed coal, metallurgical, and coke-chemical industries, has been short of water. Water consumption is increasing each year: Water is required for the cities, for irrigation of truck gardens, and for the needs of industry. In a few years, the water problem in the Donbass will be entirely resolved. The Soviet Government has planned a vast program of hydraulic engineering works in this area, among which construction of the Severnny Donets-Donbass Canal is the main one.

The canal, 125 kilometers long, will originate at the village of Raygorodok, Stalinskaya Oblast, and will terminate near the city of Stalino. Branch canals will be built along the way to the heavily populated industrial centers. Several Donets cities will have new water lines. Upon completion of the entire program, consumption of water in the Donbass will increase 2-3 times per inhabitant.

Completion of the canal and related hydraulic structures is set for 1958.

In order not to destroy the water regimen of the Donets, several reservoirs will be built along the canal. The largest reservoir, to be built at the village of Krasnyy Oskol, Khar'kovskaya Oblast, will hold 550 million cubic meters of water. Other reservoirs will be created at Gorlovka, Stalino, Chistyakovo.(110) Upon completion of the first stage of construction of the Severnny Donets-Donbass Canal, 17 cubic meters of water per second will flow through the canal: in 1958, when the canal will be entirely finished, there will be a flow of 25 cubic meters of water per second. Plans call for construction of 4 reservoirs, 4 large pumping stations, and 13 water-distributing structures on the canal.(111) The Canal will terminate in a large reservoir to be built between Yasinovataya and Stalino on the upper reaches of the Kal'mius River.(112)

Construction of the canal calls for 26.5 million cubic meters of earthwork, 681,000 cubic meters of concreting, and installation of 65,000 tons of steel pipe and 5,000 tons of metal structural members.(113) In connection with construction of the North Donets-Donbass Canal, 178 kilometers of high-voltage electric power transmission lines and 131 kilometers of motor roads must be built.(114) To divert water from the Severnny Donets into the canal, the water will have to be raised 159 meters. Gorlovka will be the center for the whole construction project. About 90 excavators, 4 suction dredges, 1,000 motor vehicles, and tens of bulldozers and scrapers will be working simultaneously along the route of the canal.(115)

From the Severnny Donets-Donbass Main Canal, 207 kilometers of main pipelines will be built to the cities of Stalino, Makeyevka, Gorlovka, Yenakiyev, Druzhkovka, Krasnoarmeysk, Konstantinovka, Kramatorsk, Slavyansk, Artemovsk, and Chasov-Yar. The four reservoirs to be built along the canal will have a combined capacity of over 30 million cubic meters of water and the four pumping stations will have a combined capacity of over 77,000 kilowatts. The tremendous reservoir to be built on the Oskol River will have a surface area of over 15,000 hectares and will hold almost three times more water than existing reservoirs in the Donbass now hold. In all, the builders will place 1,205,000 cubic meters of concrete and reinforced concrete, assemble about 13,000 tons of metal structural members, manufacture 39,000 tons of metal reinforcements, roll and weld 78,000 tons of steel pipe, pave 846,000 square meters of sides of dams and channels of canals, and build 310 kilometers of motor roads.(116) The Krasnooskol'skoye Reservoir will be 4 kilometers wide in places and over 120 kilometers long, with a depth of 16 meters at the dam.(117)

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In March 1955, excavation of the channel of the Severnyy Donets-Donbass Canal had begun in the vicinity of the city of Slavyansk.(118) In May 1955, "Ukrvodstroy" was building 26 kilometers of the canal between the village of Orekhovatka and the city of Chasov Yar. Railroad flatcars were arriving in Slavyansk, Gorlovka, and Artemovsk laden with machines and machinery for "Donbasskanalstroy" from Moscow, Leningrad, Chelyabinsk, Gor'kiy, and Minsk.(119)

UZBEK SSR

In 1954, tremendous sums allocated for irrigation construction in the Uzbek SSR were not utilized. These sums amounted to 60.8 million rubles or 31.6 percent of the total allocated. A number of projects scheduled to go into operation in 1954 were not completed, including the Urta-Tokayskoye Reservoir, the Damkhodzhiyskiy Hydraulic Development and others.(120) In 1954, the Ministry of Water Resources Uzbek SSR did not put into operation a single one of the projects scheduled. In the last 3 years, out of a planned 52,000 hectares of land to be improved by irrigation, only 32,000 hectares have been so improved. The 1955 plan calls for completion of a number of large irrigation projects: the Kuyu-Mazarskoye and the Uch-Kizylskoye Reservoirs, the Dam-Khodzhinskiy Hydraulic Development on the Zeravshan River, and a reinforced-concrete dam on the Chirchik River.(121)

Iski-Angarskiy Irrigation Canal

Rebuilding of the old Iski-Angarskiy Canal, which extended from north to south through Samarkandskaya and Kashka-Dar'inskaya Oblasts, began in 1954. The canal will water 140,000 hectares of land in Kashka-Dar'inskaya Oblast and 43,000 hectares in Samarkandskaya Oblast.(122) In March 1954, one section after another was being completed with the tractors sent from Stalingrad, the graders and scrapers from Chelyabinsk, the excavators from Voronezh and Kostroma, and the trucks from Yaroslavl'. The head structure of the canal is located near a siding of the Tashkent Railroad System.(123) The waters of the Zeravshan River will be diverted into the Iski-Angarskiy Canal. Among the many young kolkhoz workers building the canal in 1954, over 11,000 were members of the Komsomol.(124) Over 20,000 kolkhoz workers were taking part in construction of the canal in March 1954.(125) The Iski-Angarskiy Canal will extend 200 kilometers between the Kashka-Dar'ya and Zeravshan Rivers. In April 1955, water entered the concreted channel of the canal; 184 kilometers of the canal were opened. The canal will irrigate 33,000 hectares of land and supply water to 140,000 hectares of pastureland.(127)

Uch-Kizylskoye, Kuyu-Mazarskoye, and Tyuya-Buguzskoye Reservoirs

In March 1954, over 10,000 members of the Komsomol of Surkhan-Dar'inskaya Oblast were sent to the construction site of the Uch-Kizylskoye Reservoir.(128) The Uch-Kizylskoye Reservoir is to irrigate the area of southern Uzbekistan where fine-fibred cotton is grown. Kolkhozes have allocated large amounts for construction. The canal which links the reservoir with the Zang Main Canal has been completed as well as distribution canals which supply water from the reservoir to the irrigation systems of Termezskiy and Angorskiy rayons. It was planned to have all work entirely completed by March 1955.(129) The Uch-Kizylskoye Reservoir will have a capacity of almost 80 million cubic meters of water.(130) In October 1954, the first stage of work on the Uch-Kizylskoye Reservoir was completed and water began to enter from the Zang Main Canal. The reservoir makes it possible to reclaim immediately almost 10,000 hectares of new lands.(131)

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In April 1954, over 5 million cubic meters of earthwork had been completed, about 100,000 cubic meters of concrete and 130,000 cubic meters of stone placed, and more than 100 tons of metal structural members installed in construction of the Kuyu-Mazarskoye Reservoir. The Kuyu-Mazarskoye Reservoir will make it possible to divert surplus water in the Karakul' oasis and irrigate 8,000 hectares of wastelands as well as to supply water to over 60,000 hectares of land in Bukharskaya Oblast.(132)

In January 1954, construction of the Tyuya-Buguzskoye Reservoir was under way in the Angren-Chirchik Valley. When the reservoir is finished, the waters of the Angren will be used to irrigate 20,000 hectares of cotton fields and supply water to 60,000 hectares. The reservoir is to go into operation in 1956.(133)

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89. Kiev, Pravda Ukrainy, 26 Mar 55
90. Vechernyaya Moskva, 5 Jul 55
91. Literaturnaya Gazeta, 27 Sep 55
92. Leninskoye Znanya, 22 Sep 54
93. Sovetskaya Moldaviya, 6 Feb 54
94. Pravda Ukrainy, 14 Apr 54
95. Sovetskaya Litva, 29 May 54
96. Izvestiya, 15 Apr 54
97. Komsomol'skaya Pravda, 13 Aug 54
98. Kommunist, 30 Oct 54
99. Sovetskaya Latviya, 23 Jan 55
100. Izvestiya, 2 Mar 55

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101. Moscow, Sel'skoye Khozyaystvo, 14 Jan 54 .
102. Sovetskaya Litva, 18 Sep 54
103. Sovetskaya Kirgiziya, 4 Jul 54
104. Minsk, Sovetskaya Belorussiya, 16 Jul 54 .
105. Trud, 5 Feb 54
106. Sovkhoznaya Gazeta, 12 Feb 54
107. Sovetskaya Kirgiziya, 23 Feb 54
108. Pravda Ukrainy, 25 Jun 55
109. Krasnaya Zvezda, 29 Jun 55
110. Literaturnaya Gazeta, 26 Jun 54
111. Komsomol'skaya Pravda, 20 Jun 54
112. Gudok, 16 Jun 54
113. Moscow, Vodnyy Transport, 17 Jun 54
114. Bakinskiy Rabochiy, 20 Jun 54
115. Krasnaya Zvezda, 8 Jul 54
116. Stroitel'naya Gazeta, 3 Sep 54 .
117. Izvestiya, 26 Feb 55
118. Kraznaya Zvezda, 25 Mar 55
119. Sovetskaya Belorussiya, 28 May 55
120. Pravda Vostoka, 27 Mar 55
121. Ibid., 30 Mar 55
122. Ibid., 21 Feb 54
123. Sovetskaya Litva, 12 Mar 54
124. Komsomol'skaya Pravda, 9 May 54
125. Izvestiya, 13 Mar 54
126. Sovkhoznaya Gazeta, 13 Jun 54
127. Komsomol'skaya Pravda, 17 May 55
128. Ibid., 23 Mar 54
129. Sovetskaya Kirgiziya, 11 Mar 54
130. Pravda Vostoka, 30 Jul 54
131. Pravda, 18 Oct 54
132. Pravda Vostoka, 30 Apr 54
133. Bakinskiy Rabochiy, 29 Jan 54

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