

## § 3592.2

partial plan may be approved and supplemented from time to time. The operator/lessee shall not, however, perform any operation except under an approved plan.

### § 3592.2 Maps of underground workings and surface operations.

Maps of underground workings and surface operations shall be drawn to a scale acceptable to the authorized officer. All maps shall be appropriately marked with reference to Government land marks or lines and elevations with reference to sea level. When required by the authorized officer, vertical projections and cross sections shall accompany plan views. Maps shall be based on accurate surveys and certified by a professional engineer, professional land surveyor or other professionally qualified person. Accurate copies of such maps or reproductive material or prints thereof shall be furnished by the operator to the authorized officer when and as required.

### § 3592.3 Production maps.

(a) The operator shall prepare maps which show mineral production from the leased lands. All excavations in each separate bed or deposit shall be shown in such a manner that the production of minerals for any royalty period can be accurately ascertained. Maps submitted for in situ or solution mining shall show pipelines, meter locations, or other points of measurement necessary for production verification. Production maps shall be submitted to the authorized officer at the end of each royalty reporting period or on a schedule determined by the authorized officer. As appropriate or required by the authorized officer, production maps also shall show surface boundaries, lease boundaries and topography, including subsidence resulting from mining activities.

(b) In the event of failure of the operator to furnish the maps required by this section, the authorized officer shall employ a licensed mine surveyor to make a survey and maps of the mine, and the cost thereof shall be charged to and promptly paid by the operator/lessee.

(c) If the authorized officer believes any map submitted by an operator/les-

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see is incorrect, the authorized officer may cause a survey to be made, and if the survey shows the map submitted by the operator/lessee to be substantially incorrect in whole or in part, the cost of making the survey and preparing the map shall be charged to and promptly paid by the operator/lessee.

### Subpart 3593—Bore Holes and Samples

#### § 3593.1 Core or test hole cores, samples, cuttings.

(a) The operator/lessee shall submit promptly to the authorized officer a signed copy of records of all core or test holes made on the lands covered by the lease, license or permit. The records shall be in a form that will allow the position and direction of the holes to be located on a map. The records shall include a log of all strata penetrated and conditions encountered, such as water, gas or unusual conditions. Copies of analysis of all samples shall be transmitted to the authorized officer as soon as obtained or as requested by the authorized officer. The operator/lessee shall furnish the authorized officer a detailed lithologic log of each drill hole and all other in-hole surveys or other logs produced. The core from test holes shall be retained by the operator/lessee for 1 year or such other period as may be directed by the authorized officer, and shall be available for inspection by the authorized officer. The authorized officer may cut such cores and receive samples as appropriate. Upon the request of the authorized officer, the operator/lessee shall furnish samples of strata, drill cuttings and mill products.

(b) Surface drill holes for development or holes for prospecting shall be abandoned to the satisfaction of the authorized officer by cementing and/or casing or by other methods approved in advance by the authorized officer and in a manner to protect the surface and not endanger any present or future underground operation or any deposit of oil, gas, other mineral substances or aquifer.

(c) Logs and analyses of development holes shall not be required unless specifically requested by the authorized officer. Drill holes may be converted to

surveillance wells for the purpose of determining the effect of subsequent operations upon the quantity, quality of pressure of ground water or mine gases. Such conversion may be required by the authorized officer or requested by the operator/lessee and approved by the authorized officer. Prior to the termination of the lease, license or permit term, all surveillance wells shall be reclaimed unless the surface owner assumes responsibility for reclamation of such surveillance wells. The transfer of liability for reclamation shall be approved in writing by the authorized officer.

(d) When drilling on lands with potential for encountering high pressure oil, gas or geothermal formations, drilling equipment shall be equipped with blowout control devices acceptable to the authorized officer.

### Subpart 3594—Mining Methods

#### § 3594.1 Ultimate maximum recovery.

(a) Mining operations shall be conducted in a manner to yield the ultimate maximum recovery of the mineral deposits, consistent with the protection and use of other natural resources and the protection and preservation of the environment—land, water and air. All shafts, main exits and passageways, as well as overlying beds or mineral deposits that at a future date may be of economic importance, shall be protected by adequate pillars in the deposit being worked or by such other means as approved by the authorized officer.

(b) New geologic information obtained during mining regarding any mineral deposits on the lease shall be fully recorded and a copy of the record furnished to the authorized officer, if requested.

#### § 3594.2 Support pillars.

Sufficient pillars shall be left during first mining to ensure the ultimate maximum recovery of mineral deposits prior to abandonment. All boundary pillars shall be 50 feet thick unless otherwise specified in writing by the authorized officer. Boundary and other main pillars shall be mined only with the written consent or by order of the authorized officer.

#### § 3594.3 Boundary pillars and isolated blocks.

(a) If the ore on adjacent lands subject to the regulations in this part has been worked out beyond any boundary pillar, if the water level beyond the pillar is below the operator's/lessee's adjacent operations, and if no other hazards exist, the operator/lessee shall, on the written order of the authorized officer, mine out and remove all available ore in such boundary pillar, both in the lands covered by the lease and in the adjoining premises, when the authorized officer determines that such ore can be mined without undue hardship to the operator/lessee.

(b) If the mining rights in adjoining premises are privately owned or controlled, an agreement may be made with the owners of such interests for the extraction of the ore in the boundary pillars.

(c) Narrow strips of ore between leased lands and the outcrop on other lands subject to the regulations in this part and small blocks of ore adjacent to leased lands that would otherwise be isolated or lost may be mined under the provisions of paragraphs (a) and (b) of this section.

#### § 3594.4 Development on leased lands through adjoining mines as part of a mining unit.

An operator/lessee may mine a leased tract from an adjoining underground mine on lands privately owned or controlled or from adjacent leased lands, under the following conditions:

(a) The only connections between the mine on lands privately owned or controlled and the mine on leased lands shall be the main haulageways, the ventilationways and the escapeways. Substantial concrete frames and fire-proof doors that can be closed in an emergency and opened from either side shall be installed in each such connection. Other connections through the boundary pillars shall not be made until both mines are about to be exhausted and abandoned. The authorized officer may waive any of the requirements of this paragraph when it is determined such waiver will not conflict with the regulations in 30 CFR part 57 and will promote maximum recovery of the ore.